



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



American Druggist

AN

ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry and Materia Medica

FRED'K A. CASTLE, M.D.,

LATE PHYSICIAN TO THE PRESBYTERIAN HOSPITAL

EDITOR

CHARLES RICE, Ph.D.,

CHEMIST OF THE DEPARTMENT OF PUBLIC CHARITIES
AND CORRECTIONS

ASSOCIATE EDITOR

VOL. XIV



WILLIAM WOOD & COMPANY

PUBLISHERS

56 & 58 LAFAYETTE PLACE, NEW YORK

1885

CATALOGUED
F. H. B.
11/13/12

526

American Druggist

Vol. XIV. No. 1. NEW YORK, JANUARY, 1885. Whole No. 127.

[ORIGINAL COMMUNICATION.]

THE ARTISTIC DECORATION OF DRUG-STORES.

[Continued from December, 1884.]



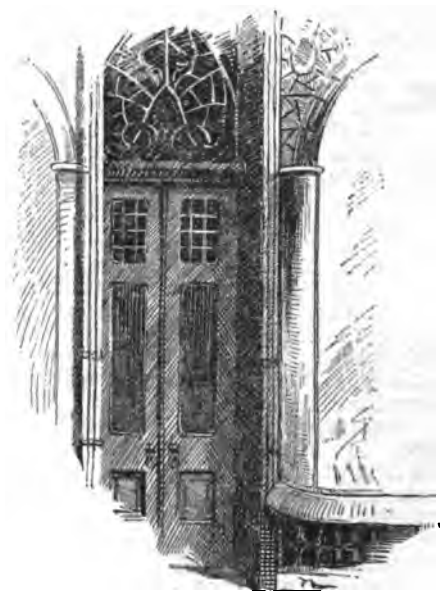
ARTISTIC decoration plays an important part in the present age, not only in matters internal, but with regard to aspects that are purely external.

American architecture and architectural aims appear to have blossomed forth into a floridity and passion of ornamentation paralleled only by the conditions of the baroque period of European art. Whether this be a healthy and normal phase of the development of a national architecture is a question which may be discussed at length. A tendency to over-elaboration, excessive attention to detail, and a general lack of singleness and

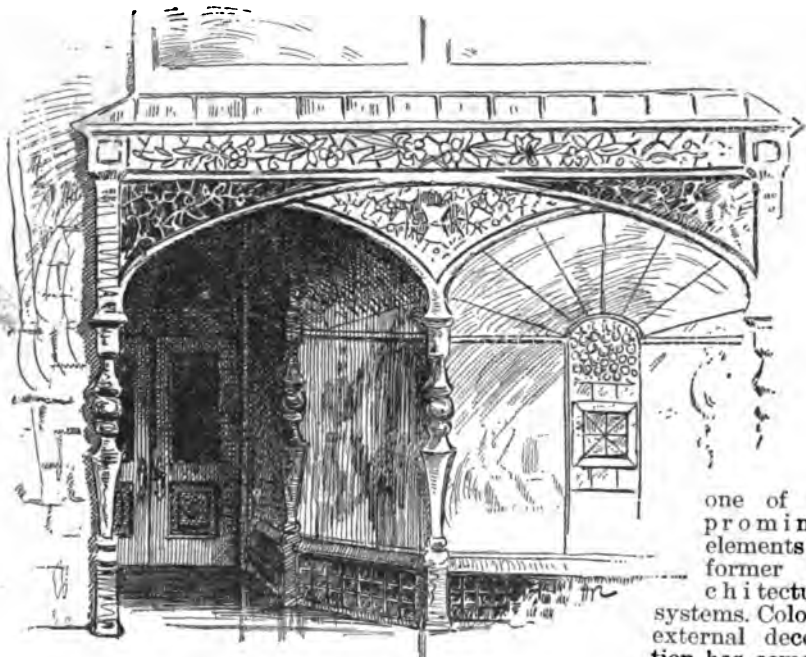
fares of New York show traces of the passage of the architectural art-idea in the presence of terra cotta plaques, friezes of wrought iron, panels of colored or jewelled glass, and similar adornments. Business enterprise causes the owners and lessees of these shops to keenly realize the truth that they must keep abreast with the times, must hold their own with the rest of the world, or be swept from their footing by the strong current of competition. Any one who compares the present aspect of the fashionable business streets of New York with that presented by them a few years back, cannot fail to perceive their gain in brilliancy and attractiveness, through the application of the decorative principle in architecture to the construction of shop-fronts. The results may not always be in the purest taste, but they offer an appropriate background for the brilliant many-sided life of the cosmopolitan American city. The American love of color, which reveals itself in so many different ways in the streets of our large cities, is strongly felt in the architectural decoration of the shop-fronts. The idea of color in architecture is part of the contemporary American art revival, and is directly opposed to the severity of the constructive principles of our earlier national period. None the less was it

symmetrical, feminine lines and curves.

This kind of architecture is eminently adapted to drug-store fronts, from the dual standpoint of objective decoration and artistic significance. The modern pharmacist occupies



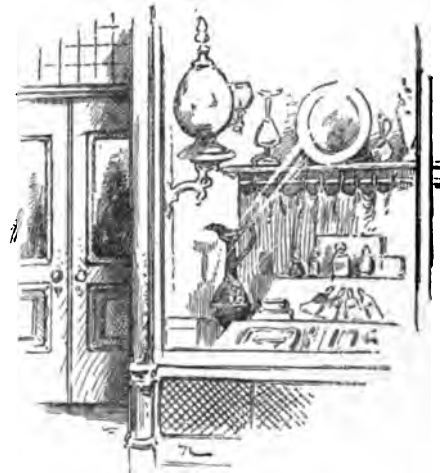
the place of the wise man of the East, who dealt in magical herbs and simples, and wrought enchantments by means of rare and precious drugs. The small broken lines and curves, the dashes of color, which enter into the architectural scheme, are in direct artistic relation with the interior decoration of the windows under favorable conditions. As matters stand, however, the druggists of our large cities—such as New York, apparently do not show the same enterprise in modernizing their shop-fronts to meet the requirements of the contemporary idea



one of the prominent elements of former architectural systems. Color in external decoration has come to us from the East

unity of purpose, are apt to be the fatal marks of architectural, as of artistic, decadence. One argument, however, in favor of the present *furor* for ornamental and elaborate design in architecture lies in the existence of a corresponding element in the national life, which is composite, irregular, full of surprises, and largely made up of the odds and ends of older nations both in the human and artistic relations. From the mansion, literally a republican palace, of the millionaire on the Fifth Avenue, down to the small shop on the obscure side-street, we see the present rage for decorative architecture exemplified at every turn. The millionaire's house is, superficially, a mass of elaborate stone carving, of jewelled glass, of wrought iron and of other precious and artistically treated substances. In almost every house or shop erected or remodelled during the last ten years, we find some element or other of architectural external decoration. Nearly all the shops along the main thorough-

by way of the mediæval Italian cities. It is part of the audacity of the American character that it should thus boldly revive and appropriate to its own use the almost practically forgotten conditions of past civilizations, completely reconciling them with its own climatic and social conditions. Any one who takes the trouble to stroll past the lines of shops on the fashionable highways of New York, can soon assure himself of the fact that the tendency of the day in the matter of shop-front architecture is Oriental, in various phases and modifications, such as the Byzantine and the Moorish. This is the case as regards both form and color. It is not a substantial style of architecture in regard to outward effect. It is light, airy and graceful, at once delicate and brilliant. It composes admirably with the colors of the different goods exposed for sale in the windows. It is just fantastic and capricious enough to form an appropriate setting for the constantly varying display inclosed within its



of architectural decoration, as do their neighbors in other lines of trade. Here, again, as in the matter of window-arrangement, the druggist appears to feel that his business can be successfully carried on purely on the basis of its intrinsic necessity to the community. This is a fatal mistake. The eye and the artistic sense of that same community must be appealed to by every one who seeks to please a fastidious public, such as the population of a large city. In treating the front of a drug-store, which is to be entirely or partly remodelled, the conditions of size, position, and relation with other shops and buildings should be considered. It would be well if the druggist should be able to tower head

and shoulders above his neighbors in the matter of artistic effect. The drug-store should be the nucleus of the artistic decoration of an entire neighborhood. Why should the architecture of the drug-store be less attractive than that of the fancy goods bazaar or the lager-beer saloon? One would fancy that professional pride would be a sufficiently powerful motive force to keep the druggist's ambition in this respect up to the proper mark.

At the present time, the resources of decorative architecture appear to be almost inexhaustible. Every season brings some new material into use for purposes of external decoration, at a cost which places it within the reach of every one who is able to indulge himself at all with architectural schemes. The problem of presenting all parts of the shop-front to the best advantage is one that every druggist must solve for himself with the aid of the professional architect. He must bear in mind the fact that the professional and the commercial elements enter into his calling in about equal parts, and the architectural arrangement of his shop-front must instantly convey that impression to the mind of the passer-by.

A really admirable design for a drug-store front, in the most modern vein of decorative architecture, is afforded by the first of the illustrations accompanying this article. Here we have a striking instance of a store-front so designed as to present an appearance of breadth, and using every inch of latitudinal space to the best possible advantage. The window on the right, the window within the arch, and the door, are on three different planes. The inner window again is divided into two parts, forming an obtuse angle. By this arrangement the window space is applied judiciously, and the objects exhibited are seen under the most favorable circumstances, with effects of cross-lights, bringing out their strongest points of color and form. What adds still more to the valuable effect of breadth is the arrangement of the arches. This effect is produced by dexterous treatment of the curves of the two window arches, which are included in one wide arch, extending from one side of the front to the other. At the ground-line, the entrance is widened by the treatment of the inner window. The low, broad arches with their pseudo-Saracenic lines and curves form important elements in the production of the effect of breadth. This idea is the leading one in the scheme of the shop-front. Having this for the main purpose of the design, the architect has carried it out with creditable consistency. The whole impression of the work is that of a piece of composite oriental architecture modified and Americanized. The slender and graceful pillars supporting the arches have the same Moorish character as the wide, lightly springing arches themselves. The oriental element of color and the short, fantastic lines and forms peculiar to the East, are found repeated throughout the scheme. The setting of the glass panes under the arch of the window on the right, in wheel form, with their lines converging to the upright panel in the middle, is singularly harmonious. This panel, with its heading of jewelled glass, and its small colored panes of the same material, carries out the chromatic idea to advantage. The space in the middle of the front above the central pillar and the roots of the two inner arches are filled in with ornamental glass, consistent in design and arrangement with the general charac-

ter of the architecture. The spaces above the slopes of the wide arch on either side contain lattice work, which may be either of iron or copper, or may be solid in character and composed of any of the various materials supplied for architectural decoration. Terra cotta plaques, in designs suitable to the pharmaceutical profession, might be introduced here with good effect. The corona above may be elaborately carved, modelled, or wrought in wood, iron, or terracotta. The original shown in the illustration is designed in vines, flowers, and leaves. This illustration offers a very fair example of the kind of architectural decoration in vogue throughout America at the present time for shop-fronts. It is among the best of its kind, although that kind may not be in the very purest vein. Any druggist who models his shop-front after this illustration, or gathers from it hints as to general arrangement or details of color and form, may be sure of being on the right road unless the entire nation be on the wrong one. A front designed after this illustration, with its windows filled with artistically arranged goods, would present an admirable pictorial aspect, which would attract unusual attention from its happy combinations of form and color. One characteristic

decorative and practically useful. The sweep of archway in this illustration is effective and imposing, and as a whole, the model recommends itself as one well adapted to the ordinary conditions of the retail drug trade. The searching light to which a corner drug-store is exposed demands that all the details of ornament shall be treated with great care, and that no artistic subtleties shall be employed. It is always desirable that architectural ornament, of whatever character it may be, should be solid. Imitative substances should never be used. They are in bad taste and in bad economy. Better a little intrinsic ornament to relieve the bareness of a shop-front than a mass of ginger-bread imitations of some expensive material.

The illustration showing a high and narrow door with part of the arches on either side, is quite stately and palatial in effect. It is particularly suitable for a store on the ground floor of some large and highly decorated building, such as the new hotels and apartment-houses at New York. The lines and curves of the architecture are of the most dignified kind, though very far removed from anything like pretension. Everything about this design is solid and substantial. The effect of the whole is that of massive elegance.

The long middle panels are composed of ornamental glass of excellent quality and good artistic effect. The small open lattices above these panels are of wrought iron. They might be made with equal propriety of copper. This metal is rapidly gaining in favor among architects and decorators as American workmen are improving in their methods of handling the raw material, and more of it is finding its way into the industrial market. The space over the door may be filled in either with leaded glass of rich and harmonious colors, with ornamental ironwork, or with designs in copper.



of this kind of architecture is its pictorial quality, and the presence of this quality in the front and windows of a drug-store is artistically appropriate and desirable. It speaks well for a city when its streets have the pictorial element strongly accented in their outward aspect.

Another good design for a drug-store front is offered by the illustration which shows a shop situated at a street-corner. It is noticeable for its combinations of straight lines and its effect of height rather than breadth. The windows are very well arranged, having three sides facing the street at different angles. The architect has evidently borne in mind the position of the store, and has consistently adapted his scheme to its requirements. It is not as ornamental and florid a piece of architecture as the first design, but many persons will find it of more practical value as a model for a city drug-store. The upper part of the windows is filled in with those small panes of glass so much affected by contemporary American architects and decorators. They are nothing more than a modified revival of the old colonial fashion of limiting window-panes to a certain size, in order not to incur the tax imposed upon all panes above prescribed dimensions. It has now become one of the conceits of an age of artistic and architectural adornment, and answers a minor decorative purpose sufficiently well. In this design, the number of the street is conspicuously displayed on a glass disc in the upper part of the window in a fashion which is at once

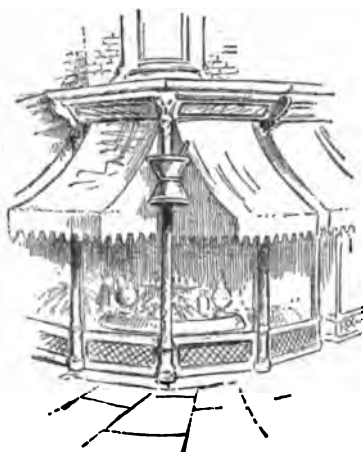
per. Copper has the advantage of adding color, warmth of tone, and effects of reflected light to the architectural schemes in which it is employed, and for the reason that it is in many ways more decorative than iron, it rivals with it in popularity. The space under the window ledge at the right-hand corner of the window is filled in with ironwork. A simpler design for a door and window may be found in an accompanying illustration. Here the window is the prominent object, and is open on three sides to the street. The architectural scheme is consistently composed of straight lines and angles. The effect is more severe than with such designs as offer combinations of curves and waved lines, but its simplicity and sobriety of treatment are very pleasing, and it is less likely to go out of architectural fashion than some of the more elaborate and modish designs. The advantage of this plan lies in the width and depth of the window which gives opportunities for the advantageous display of goods. As a model of solid, sensible architecture, it combines good taste with effectiveness. The arrangement of goods in the window should harmonize in composition of lines and masses with the character of the external architecture, as it does in the illustration. A peculiarity of this design is the shelf surmounting the rod which supports the curtain in the back-ground.

A more or less difficult architectural problem is always presented by a corner drug-store. A symmetrical and artistic bit of architecture is found in

the illustration in which the corner is so handled that there are no positive angles presented, and the outline rounds itself into the suggestion of a semi-circle. The large gilded mortar, emblematic of the pharmaceutical profession, is here used in a decorative manner to define the position of the virtual corner of the street. The awnings curve away from this central point after the graceful fashion of Arab tents. There is something particularly pleasing about the composition of line shown in this design. It is far from weak or insipid, and it is noticeable for the absence of finical ornament. The panels of lattice-work inserted in the lower part of the windows are in complete harmony with the upper part of the design. As for color and light, the gilded mortar concentrates the rays of the sun and sends them playing over the brilliant goods in the window when the awnings are drawn up. When they are down they form of themselves desirable masses of color. The practical value of such a front lies in the unusually fine effect offered by the sweep of vision. The whole interior of the window is revealed to the passer-by at a glance. With such a front as this, spherical goods and accessories forming graceful curves would be particularly appropriate as window decorations.

It frequently happens that the position of a drug-store is such that outside the window or the front there remains a vacant space of ground which properly belongs to the store. It is an excellent plan to fill in this space with ornamental shrubs or

projecting from a wall with the double intention of affording a decoration and of attracting attention from a distance, on either side, by its projection beyond the line of the wall. It is especially adapted for the side of a corner store, in which the show-window on the front is hardly to be seen by persons approaching from the street. It is just large enough to con-



tain a colored jar and a gas-jet covered with a globe, and its position above the heads of the pedestrians makes of it a kind of guiding star to those coming from a distance at night. It will bear considerable ornament and forms an excellent decoration, both artistically and from the stand-point of significance, for a drug-store front.

[To be continued.]

Use of Boric Acid for Preserving Food.

FROM a series of experiments made with a view to determine the action of boric acid on the animal system, the author draws the following conclusions. The admission of boric acid as addition to food, even in very small doses, is injurious to the digestive organs. This injurious action depends on the circumstance that boric acid acts so as to materially increase the proportion of solid matters and nitrogen in the faeces separated. It is also

a remarkable coincidence, that the action of boric acid on the intestinal discharge is well-marked, even by the exhibition of so little as 0.5 gramme per diem. Moreover, this action is in direct relation to the quantity of acid taken and is maintained for some time. The action described is perceptible, not only with vegetable or animal foods, which contain a large proportion of indigestible ingredients, but also when highly digestible food, such as milk and eggs, is taken. Food to which boric acid has been added tends to cause an increase in the secretion of gall during assimilation. Its most important action, however, is the increase which it causes in the discharge of albuminous substances from the intestinal canal. It is evident that its use as a food preservative is not as beneficial as hitherto assumed.—J. FORSTER, *Dingl. Pol. J. and J. Chem. Soc.*

Secure Corks.

TIGHT-closing corks may be obtained by soaking good corks for several hours in a warm (about 50° C. or 122° F.) solution of 15 parts of glue or gelatin in a mixture of 24 parts of glycerin, and 500 parts of water. These corks may be made still more proof against acids, by dipping them, after being completely dried, for about ten or fifteen minutes in a warm mixture of 4 parts of paraffin, and 1 part of vaseline.—*Polyt. Mittheil.*

[ORIGINAL COMMUNICATION.]

EXTRACT OF CANNABIS INDICA.

BY HENRY MACLAGAN.

SINCE the publication by the writer, in the AMERICAN DRUGGIST for July, of an article on copper as the source of the color of this extract, two criticisms have appeared, one by the editor of the *Chicago Pharmacist*, and one by Dr. E. R. Squibb, of Brooklyn, published in his *Ephemeris*. As the latter statement effectually controverts that of the *Pharmacist*, it will be necessary to reply to Dr. Squibb only.

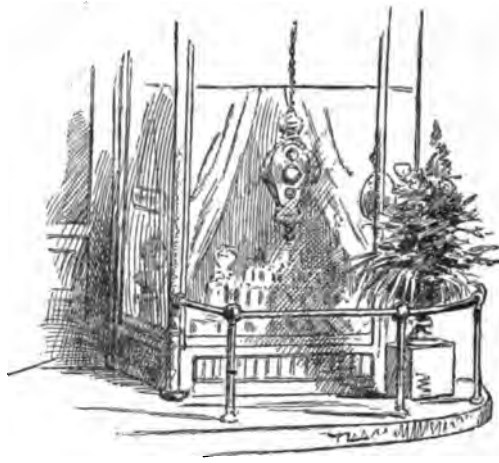
It should be here stated that it was not intended in the original article that the idea should be conveyed that copper was present in harmful quantity, as Dr. Squibb assumes; the amount of metal present and the smallness of the dose of the extract, should have precluded such a supposition. The object was to point out the fact that the usual dark, rich green color of the extract was not natural, and, incidentally, the objection to the use of copper vessels in making such preparations.

Dr. Squibb concedes the presence of copper in his extract, but claims to have found a much smaller quantity than the writer has stated, and with this exception, if due allowance be made for the fact that the doctor is to a certain extent acting upon the defensive, he practically admits the truth of the statement that "the dark-green color characteristic of most



plants growing in the stone or metallic urns sold for the purpose. A handsome railing should extend about the window or front. Wrought iron of elaborate design used in this way would give a sumptuous look to any drug-store front. A very artistic example of such an arrangement is offered by an accompanying illustration than which nothing could be more decorative nor in more correct taste, the scrolls of the iron-work well harmonizing with the lines and curves of the plants and the goods in the window. A simpler design of the same kind has a plain brass railing and an urn filled with growing plants at the right-hand corner. The window decoration in this illustration offers excellent suggestions. We will imagine a large antique brass lamp, such as one sees in studios and *bric à brac* shops, suspended from above by a brass chain. Curtains of yellow India silk fall in long folds on either side. If a few yellow flowers of the hardy decorative varieties, such as wall flowers, careopes or chrysanthemums should appear among the mass of green vines or large leaves, the artistic quality of the effect would be greatly increased. Flowers and shrubs are as valuable for external accessories of drug-stores as for internal.

An original and practical idea is that illustrated by the design of the initial letter—a sort of lantern window



samples is not natural," although he ingeniously endeavors by argument to have it appear otherwise. He says that an "experimental" extract made without contact with copper was precisely like his "stock" extract when viewed in mass, but "at the thin edges against the porcelain, there was a distinct difference in color, the experimental extract being still green and not brown, but with a yellower or browner tinge." The comparison in mass is hardly fair, as any two dark-colored extracts will look alike under such circumstances, and it is only in thin layers that a comparison can be properly made, and the true color ascertained. Very few pharmacists, it is thought, will agree with Dr. Squibb that the "non-coppered" extract is green, and luckily there happens to be a very easy way for those interested to judge the case for themselves. Dr. Squibb's fluid extract is made by repercolation, without contact with copper, and represents an equivalent quantity of good Cannabis tops. Let any one evaporate an ounce or so of this in porcelain, at say 150° F., with a "partial exclusion of light," and with a total exclusion of prejudice judge the color by smearing a little of the extract on white paper. Of course, different persons in describing an indefinite color such as this is, would probably vary somewhat in their judgment, but whatever color may be finally settled upon, it is not possible

that extract of Cannabis free from copper can ever be described as a purely green extract, and such Dr. Squibb's and others certainly are. It may have been an error to call the color "brownish-black with scarce a tinge of green," but if so, the German Pharmacopoeia is also wrong, as that authority states that the extract is "dark-brown."

The writer did not "overlook the fact that a drug containing a large quantity of green chlorophyll might yield to a good solvent a green extract." This can only be the case where the chlorophyll is in good quantity, and the other extractive matters are lighter than it in color. Dark colors neutralize or swallow up lighter ones, and the modifying influence of either must always be in proportion to its intensity. According to Dr. Squibb's "fact," all extracts from leaves or leafy plants should be green, while very many are not so, and it is not always because the chlorophyll is altered or destroyed in the process of manufacture; it is probably still present, but it is neutralized and overcome by the darker extractive matter taken up by the solvent. Many such extracts still retain a "suggestion" of greenish color, some more and some less, according to the relative proportion of the coloring principles. Extract of Cannabis being made from a leafy plant, of course contains the usual proportion of chlorophyll, but the blackish resinous extractive matter is so much greater in quantity and more intense in color that the green is almost if not entirely obliterated. The brown extract readily yields chlorophyll by treatment with warm hydrochloric acid.

In explanation of the deep green color of the extract containing copper, Dr. Squibb offers the theory that that metal retards or prevents the destruction of the chlorophyll by heat, and therefore that the color is due entirely to that substance. To test the correctness of this, a quantity of extract free from copper was dissolved in alcohol, and evaporated in porcelain at the full heat of a steam-bath with free access of light and air. Solution and evaporation was repeated ten times, and it was then thought that the chlorophyll must by that time be destroyed, if it is injured at all by heat under such circumstances. The extract was then brownish-black as originally, and was redissolved in alcohol and evaporated in a copper vessel. The color quickly changed to green, and the finished product had the usual dark-green color; thus showing that this color was not due to chlorophyll, if that substance is so easily destroyed by heat, as has been assumed.

In the course of these experiments it was found that the solid extract had very little effect on copper in the absence of alcohol. Some brown extract was heated in a copper vessel for several days, with but little if any change of color; it was then dissolved in alcohol and evaporated in the same vessel, with the usual green extract resulting. Whether the alcohol as such has any effect, or whether the increased activity is due to greater fluidity cannot yet be stated.

In the original article it was stated that contact with copper rendered a portion of the extract insoluble in alcohol, and it was surmised that prolonged contact would probably bring the whole into that condition. Subsequent experiments have to a certain extent verified the opinion. A moderately weak tincture of the brown extract was placed in a bottle with a few strips of copper, and shaken; in a short time the color of the tincture had become a beautiful green, but, on standing, this color gradually faded, and after the lapse of three weeks, there was a large green deposit in the bottle, and the supernatant liquor was

about the color of sherry wine; this on evaporation left a very light-brown resinous residue. The exact nature of this change has not yet been determined, but the fact is clearly indicated that this extract has a strong affinity for copper.

Now as to the quantity of copper present in commercial extracts of Cannabis, the writer gave it as $\frac{1}{4}$ of one per cent, or about one grain in each ounce, while Dr. Squibb found only about $\frac{1}{4}$ of that quantity in his extract. As the doctor gives details of his analyses, the intelligent reader will be enabled to judge of the value of his conclusions. The writer will be content with stating that it can easily be demonstrated that Dr. Squibb, in the preliminary analysis, threw away about nine-tenths of the copper (in the resinous precipitate), and found about one-tenth of the quantity actually present. In the second and crucial analysis, the quantity of extract taken for examination (1.85 grammes or 29 grains) was altogether too small, especially where there existed a disinclination on the part of the analyst to go to the trouble of preparing a fine balance for weighing the result, which would only have been about three milligrammes, or $\frac{1}{16}$ grain, if $\frac{1}{4}$ of one per cent were present.

The writer has examined many samples of extract of Cannabis, and with practically uniform results; below are given those obtained from Dr. Squibb's: in each case about ten grammes (10.00) were incinerated, and the ash treated with hydrochloric acid, the solution diluted with water and filtered. Some of the estimations were then made by reduction with zinc, the copper resulting being treated with ferric chloride, and titrated with potassium permanganate; others were made with hydrogen sulphide, the cupric sulphide being washed with sulphuretted hydrogen water, dried, and ignited with sulphur in a current of hydrogen. About 20 C.c. of liquid resulted from the solution of the ash, and in each case was of a decidedly bluish tint, the presence of copper being actually apparent to the eye.

10.54 grammes extract with zinc gave 0.028 Cu; this with Fe_2Cl_3 , etc., 0.029.

10.20 grammes extract with zinc gave 0.285 Cu; this with Fe_2Cl_3 , etc., 0.029.

10.00 grammes extract with zinc gave 0.026 Cu; this with Fe_2Cl_3 , etc., 0.258.

10.68 grammes extract with H_2S gave 0.035 Cu_2S , equal to Cu 0.028.

12.07 grammes extract with H_2S gave 0.0436 Cu_2S , equal to Cu 0.0349.

11.80 grammes extract with H_2S gave 0.040 Cu_2S , equal to Cu 0.032.

The extracts of other makers yielded results very similar to the above.

In conclusion, is not Dr. Squibb somewhat inconsistent in saying that the original paper "has done harm instead of the good it was intended to do," and in almost the same sentence announcing his intention of improving his own extract by reducing the amount of copper in it, or perhaps, excluding it altogether? The latter can be easily accomplished, and when it is, at least one brand of extract in the market will have lost its old, familiar features.

NEW YORK, Dec., 1884.

Idunium.

This is the name proposed by Professor Websky for a supposed new metal discovered by him in native vanadate of lead. Idunium is reported to resemble vanadium in several respects, both physically and chemically, and to form an oxide having acid properties analogous to vanadic acid, of the probable composition Id_2O_5 .

Removal of Copper from Extracts and other Pharmaceutical Preparations.

G. NATTIER is one of several recent writers, who draw attention of copper in certain pharmaceutical preparations which have been made in copper vessels, or have in some manner come in contact with copper. A paper on this subject by J. Rutherford Hill, was read at the late British Pharm. Conference, and the late discussion on the presence of copper in extract of Cannabis Indica will be in the reader's memory.

G. Nattier proposes to remove the copper, which may exist in any such preparation, by the well-known method of electrolysis. The preparation must of course be sufficiently diluted, otherwise the current will not be able to accomplish the object. A feeble current only should be passed; the negative pole, where the dissolved copper will be deposited, should have a large surface and may itself be of bright copper.

When thus operating, the current must not be interrupted, while the negative pole is lifted out of the liquid; otherwise a portion of the copper might be redissolved.

Cannabis Indica as a Local Anæsthetic.

A. AARONSON writes, in the *British Journal of Dental Science* (November 1st), that tincture of Cannabis Indica as a local anæsthetic is perfectly satisfactory. He has extracted with its aid as many as twenty-two teeth and stumps at one sitting. His plan is to dilute the tincture some three or five times, according to the probable duration of the operation. The diluted tincture is then applied in cotton wool to cavities, if such exist, and also about the gums of the affected teeth. The beaks of the extracting forceps are also, after being warmed, dipped in the diluted tincture. In cold weather, it is wise to dilute the Cannabis Indica with warm water. His patients acknowledge the immunity from pain they enjoyed during the extraction, and all expressed surprise and pleasure at the simplicity of the performance. The ordinary methods of anæsthetizing are subject to danger; this is as effectual, and is devoid of the possibility of harm.—*Chem. and Drugg.*

"Putz-Pomade for Metals."

A RECENT formula is as follows: Reduce 100 parts of cocoanut-oil soap to fine shavings and mix it with enough water, at a gentle heat, to produce a thick paste. Also triturate 10 parts of rotten stone with a sufficient quantity of water to produce a smooth paste, and mix with this 3 parts of carbonate of ammonium. Finally incorporate this mixture with the soap-paste, after it has become cold. The product should be kept in stone-pots secured with bladder or parchment.

Mode of applying Chrysarobin in Eczema.

AUSPITZ has found that the best method of applying chrysarobin (so-called chrysophanic acid) in eczema is by the intervention of solution of gutta-percha (Liquor Gutta-perchæ U. S. Ph., a solution of gutta-percha in chloroform), once known under the name of traumaticine or chloropercha. He dissolves one part each of chrysarobin and of gutta-percha in eight parts of chloroform.

Besnier prefers first applying a solution of the chrysarobin in the chloroform, and covering this with a varnish of the gutta-percha solution.—*Chem. and Drugg.*

THE KOLA-NUT.

THE recent discovery of the anæsthetic action of cocaine has led several investigators to examine the therapeutic effects of certain allied substances which have been known to be used for assuaging hunger, and for bearing protracted fatigue. The principal one of these is caffeine (in coffee or tea); others are guaranine and theobromine. It has, however, been ascertained, at least in the case of caffeine, that it does not share the peculiar property of cocaine of acting as a local anæsthetic, but, on the contrary, is a local irritant. Nevertheless, experiments are being continued with the various drugs yielding these principles, and among them the kola-nut has attracted attention because it has long been known to be used, by the natives in a portion of Western Africa, for precisely the same purposes as coca is used by the mountaineers of the Andes. We have

with fresh water, and covered with new leaves; in this way they are said to keep for eight or ten months.

Heckel and Schlagdenhauffen have found the seeds to contain 2.35% of caffeine and 0.02% of theobromine.

The fruit of the kola-tree (*Sterculia acuminata* Sch. and Endl.) consists of a chestnut-brown pericarp, covered with a dry skin, and inclosing two to ten seeds. It has (at least the specimen accessible to Mr. Zohlenhofer had) about the shape of a flattened egg, is nine cm. long, five cm. broad, and three cm. high. At one end is seen the place where the stalk has been broken off, the other end ends in a short beak.

that of a chestnut. The taste is similar to that of the coffee-bean.

Zohlenhofer's experiments confirm the statement made by others that the chewing of the seed makes drinking-water, even when comparatively impure or stale, quite palatable.

Mustard Paper.

MR. GEORGE McDONALD, of Kalamazoo, Mich., in a paper read at the late meeting of the Michigan Pharmaceutical Association, states that the formula given by the Pharmacopœia does not seem to work well, since the mixture of powdered mustard (deprived of oil) and of solution of gutta-percha cannot be applied to the paper with a brush. He finds that the mass follows the brush and refuses to adhere to the paper. If, however, a common 8 inch spatula be used for applying



received a number of inquiries on the subject, and though we have once published an account of the plant yielding the kola-nut (NEW REM., 1881, p. 34), we think it will interest many of our readers if we supplement the information, there given, by some further details which we take from a paper by H. Zohlenhofer (in *Arch. d. Pharm.*, 222, 334):

Palisot-Beauvois, in his *Flore d'Oware*, relates that the negroes of Oware eat the kola-nuts chiefly because they have the remarkable property, after having been chewed, of imparting a pleasant taste to all subsequent food or drink, particularly to water. The effect lasts only while the interior of the mouth is lined with the magma.

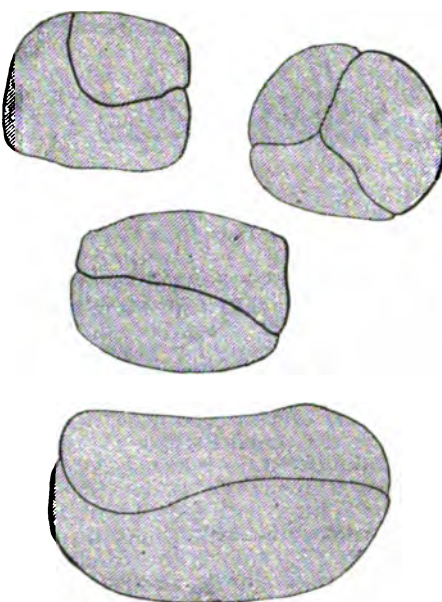
The fresh seeds of the kola are much more bitter than the dry, which is probably owing to the loss of some volatile principle lost on drying. This explains why the negroes do not care for the dried seeds, but always prefer them fresh.

Prax (in "Commerce de l'Algérie avec la Mecque et le Soudan." Paris, 1849, p. 19) says:

The merchants first strip the seeds completely from the envelope, and wrap them afterwards in large leaves taken from various *Sterculiaceæ* (to which family the kola-nut belongs). They are then packed in large baskets, called *uagha* which are formed in this manner: four pieces of flexible wood are tied together cross-wise, so that each two of them have the shape of a horse-shoe, and this frame is covered with a piece of tanned ox-hide. The basket being filled with the seeds, a four-times folded sack gherara is laid on top and tied to the four pieces of wood.

Every month the seeds are washed

The fresh seeds consist of two to three cotyledons, externally purple and internally rose-color to bright



purple. The edges of the cotyledons appear slightly swollen. The size of the cotyledons varies greatly; sometimes one is so small that it lies in a cavity inside another. The whole surface is traversed by fine wrinkles, which disappear, however, completely on drying. The embryo is anatropous and comparatively small. In consistence, the seed may be compared to

the mass, a tolerable degree of success is obtained. He also draws attention to the different features otherwise presented by the article as put on the market by manufacturers and that made by the official formula. The commercial article is on soft, unsized paper, and, therefore, soft and pliable, while the official is on stiff and sized paper. When the latter is dipped into water it does not retain enough moisture to produce the "oil of mustard" rapidly enough, while the soft, unsized paper certainly has this advantage.

The author also tried other solvents than that recommended by the Pharmacopœia for mixing with the powdered mustard, and obtained better results from a solution of one drachm of gutta-percha in ten fluidrachms of coal-tar benzol, than from any other.—After *The Druggist*.

Sodium Borobenzoate.

MR. THOS. S. WIEGAND, of Philadelphia, having had occasional prescriptions for borobenzoate of sodium, he obtained the following formulæ from friends who had used them.

1. For making the salt
Borate of Sodium..... 3 oz.
Benzoate of Sodium..... 4 "
Water, enough to dissolve.

Dissolve the salts in the water and evaporate, with constant stirring, to dryness. One-sixth of the above proportions yield one ounce.

2. To a hot solution of borax add benzoic acid sufficient to saturate it, and evaporate to dryness. This formula seems preferable.

The salt is prescribed in 12 to 15 grain doses given with tonics.—*Am. Journ. Pharm.*

CAPSULE MACHINE.

THE engraving shows a machine recently invented by Mr. I. Strickler, of 297 Main street, Poughkeepsie, N. Y., for filling gelatin capsules with quinine or other dry medicinal powders.

The powder passes from the hopper into the filling tube, placed transversely below the hopper and inclined to the horizon, to facilitate the fall of the powder toward the end of the tube in which the capsule is held. The plunger works within the filling tube from its back end. There is a bottom on the back end of the plunger for forcing it forward, the motion being arrested by a collar striking the back end of the tube.



Strickler's capsuling machine.

The plunger is forced outward by a spiral spring. The capsule rests in a recess somewhat larger than the remaining portions of the tube.

The capsule is held in place by the finger of one hand, and the plunger pressed down by the other. This forces the powder into the capsule, and the operation is repeated until the proper amount of powder has been put in. The forward end of the plunger is made slightly concave, for the purpose of leaving a convex surface on the powder, to fit the cap when put on the filled capsules. When properly filled, the capsule may be expelled by pressing the plunger inward to its full extent. The return spring motion of the filter gives it an easy and quick filling action, and as the plunger passes beneath the hopper, there is no liability of the powder clogging.—*Scient. Amer.*

The Dermal Effects of Antipyrin.

A LATELY published paper by Dr. A. Cahn, the assistant of Prof. Kussmaul, of Strassburg, points out the fact that antipyrin stands in a closer therapeutic relationship to quinine than kairin, both by its more analogous effect upon the temperature and the excretion of the urine, but also by its sometimes producing the same kind of eruption of the skin. In the case of a typhoid patient, after 675 grains of antipyrin had been administered, there appeared, on the 20th day, an erythematous eruption, unaccompanied by any subjective symptoms. This eruption showed itself as round, bright red, and slightly elevated spots disappearing entirely on pressure; the edges were somewhat indistinct, and the size of the spots varied from $\frac{1}{4}$ to 2 millimeters. Upon the elbow and patella they formed large confluent patches of a bright-red color, and here hardly any normal skin was visible. The eruption was more profuse over the anterior surfaces of the extremities than over the posterior; more profuse over the back than over the chest and abdomen. On discontinuing the antipyrin the eruption disappeared on the following day. At 2 P.M. and at 3 P.M. of the latter, the patient received again 30 grains of the drug, when the eruption reappeared at 6 P.M. on the fore-arms, and in the course of half an hour it had

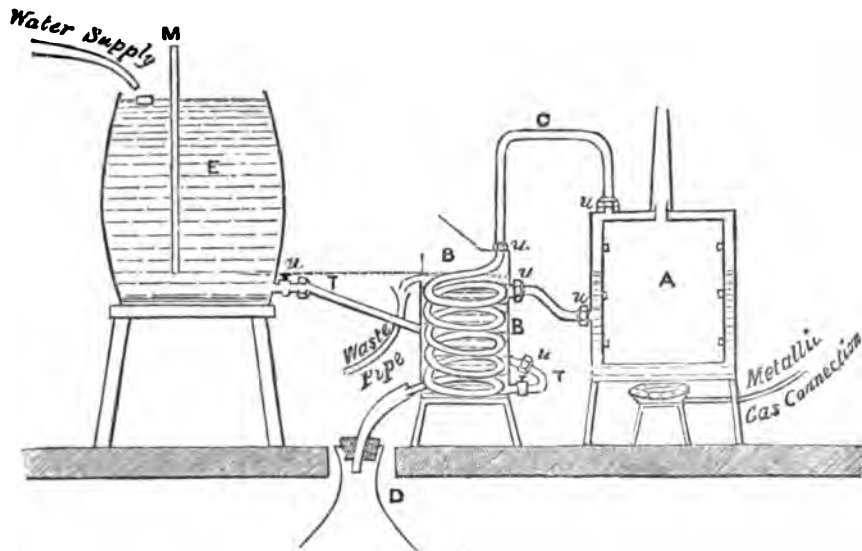
spread over the legs, arms, back, chest, and neck.

In a short time the extensor surfaces of the fore-arms and knees were covered with a bright-red, scarlatina-like, confluent eruption, while the rest of the body was thickly covered with red spots. This time the patient felt a slight sensation of warmth in the larger patches, and this was proved by the surface; the thermometer showed that the temperature of the congested spots was higher, especially the skin over the patella, which was 2.7° F. higher than the skin of the inner side of the thigh. The next day the eruption had disappeared, but could be at any time re-excited by a fresh dose of antipyrin.

It follows that antipyrin is capable of producing erythema under certain conditions, yet there are no subjective symptoms noticeable which could be construed as alarming. In fact, only by a persistent continuance of the drug do these symptoms become disagreeable. The simple remedy, therefore, when this eruption makes its appearance, is to stop the use of the drug for a while. But even this is not absolutely necessary, as subsequent observations of Dr. Cahn and other authorities in cases of typhoid fever have shown that, in spite of the eruption, the remedy may be continued without unpleasant effects.*

A CONSTANT LEVEL STEAM-OVEN AND STILL.

THE accompanying sketch of a combined steam-oven and distilled water apparatus, so arranged as to be left to itself for a long period of time without the risk of the boiler going dry, may perhaps be of interest to many chemists, and it is hoped that a few words only will be necessary to describe its working. The steam-oven A is of the



Atkinson's steam oven and still.

ordinary construction, but is fitted at the side with a tube connecting it with the condenser B. Heat is applied to A by means of a radial burner, connected with the gas supply by metallic tubing; the steam generated circulates round the drying chamber, escapes through the copper tube C, thence through a block tin worm, and falls as distilled water in the receiver D. The cistern E, fitted with a Mariotte's tube, holds cold water which falls through the tube TT, enters the condenser, where it rises slowly, absorbing heat from the condensing-worm, until it reaches the tube leading to the boiler at a high temperature. For a cistern, an 18-gallon ale cask, supported on a stool, has been found to answer admirably, having the advantage of holding suf-

* Abstract from a circular furnished by Messrs. Lutz & Movius, 15 Warren street, New York, the sole agents of the manufacturers of antipyrin in the United States.

ficient water on the top to secure the two corks being air-tight. By a suitable adjustment of a Mariotte's tube M, the rate of flow of the water can be so regulated that the level of the water in the condenser is constant, or, if desired, allowed to drop slowly into the waste pipe, while the water evaporated from A is replaced by water already near boiling. In practice it has been found necessary to allow the water to waste at the rate of about 2 drops a minute, the 18 gallons lasting for over 72 hours, during which time 10 to 11 gallons of distilled water are collected. When this apparatus was first fitted up in this laboratory, it was intended to have connected the condenser directly with the town water supply, but as the water works' authorities would sanction no such connection, we had recourse to the cistern, with the satisfactory result that we are in this respect quite independent of the caprice of the water works' turn cock. The several connections are made by union joints at u u to allow the apparatus to be taken to pieces and the boiler freed from scale. The whole apparatus may be supported upon a strong shelf, which should be protected from the heat of the burner by means of slates or asbestos mill-board. With this arrangement bulky precipitates may be allowed to remain in the steam-oven all night and found ready for further treatment next morning.—ALEX. J. ATKINSON, in *Chem. News*, Nov. 21st.

Albuminated Sublimate Gauze and Dressings.

SIR JOSEPH LISTER recently read an important address on Corrosive Sublimate as a surgical dressing, at the Opening Meeting of the Medical Society of London, which contains some interesting points and valuable hints.

After speaking of several of the usual antiseptics, among which (it may be incidentally remarked) he does not ascribe very much efficiency to iodiform, he arrives at corrosive sublimate and first pays tribute to the investigations of Koch who ascertained by positive and incontrovertible experiments, that corrosive sublimate and certain other antiseptics had a twofold power, namely either to destroy the vitality of germs or bacteria, or merely temporarily to suppress it. For instance, a solution of 1 part of corrosive sublimate in 20,000 is amply strong enough to exert a germicidal action, and another of 1 in 300,000 will be found to exert an "inhibitory" action (as Lister terms it).

These properties of corrosive sublimate are such (continues Lister) as no other antiseptic agent had ever been ascertained to possess in anything like such dilute solution. With regard to

the purposes of antiseptic surgery, the "inhibitory" action of the antiseptic would be sufficient, provided we were satisfied that the wound is left free from injurious organisms, and that the dressing which we apply, itself contains no such organisms still alive. Then all we require is that the dressing should be able to prevent the development of organisms from without into the discharges with which the dressing may be soaked.

Corrosive sublimate has been used extensively by our German brethren, chiefly in the form of sublimate wood-wool, as it is called, in which one-half per cent of corrosive sublimate, with an equal part of glycerin, is mixed with "wood-wool," that is, pinewood reduced almost to a state of powder by machinery. This is highly absorbent and has given excellent results, but is somewhat unwieldy in its application.

Prof. Lister happened to use a dressing of sublimate gauze in the case of a wound where there was a very free hemorrhage after the operation. This wound was dressed with a piece of absorbent cotton charged with about five per cent of corrosive sublimate. On redressing the wound, Prof. Lister found that there had been no irritation caused by the dressing, as had been the case often before, and moreover, the blood-clot had an appearance such as he had never seen before. From the epidermic edges of the wound, the epidermis crept over the blood-clot like the white claws of an animal extending over the dark coagulum. Prof. Lister's explanation is this, that, while sublimate wool rendered the wound for surgical purposes perfectly aseptic, the albuminous discharge from the wound prevented the sublimate from coming into operation as an irritant, the most perfect conditions imaginable for healing a superficial wound.

The next question Prof. Lister takes up is, whether albumen and corrosive sublimate under all circumstances really form the insoluble, or very sparingly soluble compound recognized as such by chemists. If albumen really formed an insoluble and absolutely inactive compound with sublimate, this would probably prevent the use of the latter in antiseptic surgery. To test the matter, Prof. Lister made a solution of egg albumen, and then introduced into it some sublimate wool, the quantity of albumen being about double that which would be necessary to form the alleged chemical compound with the sublimate. After a certain time he squeezed out the wool and obtained a clear fluid, which strongly *tasted* of corrosive sublimate. Hence the albuminous fluid had actually dissolved some sublimate from the wool. This liquid he then mixed with an equal part of milk from a dairy, and the milk remained perfectly free from souring, showing that the liquid had antiseptic properties.

He next made experiments with sublimate on horse's blood, and noticed the singular phenomenon that after this had come in contact with sublimate, it formed, on coagulation, a clot which *did not contract*, and did not give up the serum with which it was mixed, Prof. Lister's intention having been to obtain some blood-serum for further experiments, and to collect it under conditions which would exclude septic substances.

While obtaining blood from a horse, he caught one portion in a separate vessel, where it was stirred during coagulation so as to remove the fibrin.

This whipped blood answered his purpose perfectly, because by virtue of the remarkable tendency of the red corpuscles of the blood of the horse to aggregate into dense masses, and to separate in a short time, the mixture of serum and red corpuscles was found in three hours to have separated into

two equal parts permitting the removal of the serum.

Experiment then made with sublimate wool, treated with various proportions of this serum in glass tubes, developed the fact that the fabric thus charged was perfectly resistant to septic processes. Even when only 1 per cent of sublimate was present, the odor noticeable after a long time was only a smell described as "being between mortar and the inner bark of some trees, which is the immediate effect of the sublimate upon serum."

While dressings of pure sublimate gauze of 1 in 500 had been observed to produce irritation and pustules on the skin, a dressing containing 1 part of sublimate in conjunction with 160 of serum produced no such effect whatever.

These and other considerations induced Prof. Lister to conclude that a combination of corrosive sublimate with albumen not only would render the former non-irritating, but to be actually the best and most suitable surgical dressing available. He recommends horse's blood-serum, which can be had in London.

Prof. Lister finds that the sublimate and the serum may be mixed in almost any proportion. He exhibited a gauze charged with a serum containing 1 part of sublimate in 75. Two and a half parts of this liquid are required for 1 part of the gauze. The charged gauze is odorless, and almost tasteless, and yet it contains nearly 3 per cent of sublimate. The proportion may be adjusted ad libitum 1 in 100 down to 1 in 30; and yet no sublimate flies off from it when dry. It is absolutely non-irritating. It should not be torn, however, as this will scatter a dust which irritates the nostrils; it should be cut with scissors.

Experiments made in the same manner with salicylic or iodoform dressings showed that these substances did not retard the decomposition of the serum. Eucalyptus gauze (if fresh) and carbolic gauze prevented its decomposition.

A different result is, however, obtained when, instead of the serum of blood, serum mixed with blood-corpuscles is used, such as is obtained from cow's blood, in which the blood-corpuscles remain largely suspended in the serum. In this case a much larger proportion of sublimate is necessary to repress septic processes. Yet, if a piece of gauze treated with 1 part of sublimate in 100 parts of pure serum, is afterwards treated with cow's blood—serum and corpuscles together—all septic action is prevented. In such a case every other kind of antiseptic failed to act except carbolic acid gauze.

Prof. Lister then says that he has recently dressed his hospital cases with gauze prepared with 1 of sublimate in 100 of serum, and also with 1 in 50. The former was always non-irritating; the latter irritated in a few cases, but on substituting the weaker gauze the healing process went on perfectly. In a case of hip-joint operation on a boy, the gauze was used, and after three days the symptoms were highly promising, there being normal temperature and returning appetite and strength. Prof. Lister strongly recommends that the gauze should be used in abundance (at least 16 layers) during the first twenty-four hours.

Prof. Lister thinks that this sublimated serum [which can be evaporated into scales on glass plates] will become an article of commerce, and that it will also be possible to dry and powder it, so that it may be mixed with vaseline as an antiseptic dressing, or even for dusting over the dressings.—After *Lancet*, Oct. 25th, '84.

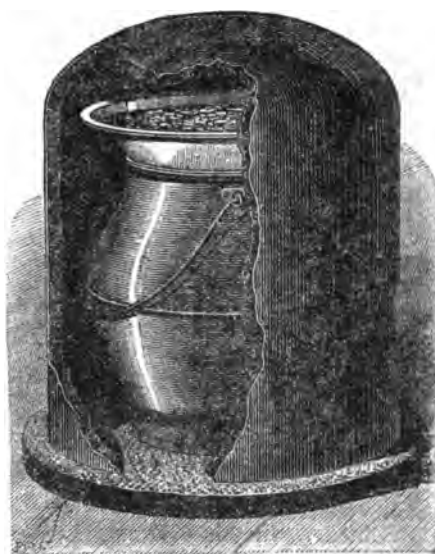
"If you don't keep out of this yard you'll catch it," said a woman to a boy in West Lynn. "All right," answered the gamin; "I wouldn't have come in if I had known your folks had it."

THE NON-CONDUCTING HOOD.

This invention has for basis the well-known principle that the cooking of food may be effected through a preservation, for a given length of time, of the requisite amount of heat that has first been obtained.

[It is not alone for cooking food that this simple apparatus is useful for; it will be applicable to many purposes in the pharmaceutical or chemical laboratory, as, for instance, for prolonged digestion, for the very slow cooling of liquids intended for crystallization, etc., and it is on this account we give it room here.—[Ed. A. D.]

This hood consists of a dome-shaped contrivance of very thick felt, which is covered with cere-cloth, and is designed as a cover for a pot, saucepan, tureen, or any vessel whatever that contains food which one desires to cook or keep hot. The saucepan or other vessel is placed upon a heated refractory brick that rests upon a piece of thick felt, the hood is placed over the whole, and the apparatus is complete.



The object is to effect a saving in the fuel generally used for cooking food, to effect a saving in the time and surveillance that are necessary in all other methods, and to keep solid and liquid food hot at all hours of the night and day without any danger of spoiling it through excess of heat.

In order to show how the apparatus works, Mr. Lecorme du Tailles, the inventor, had prepared at the house of the director of the Normal School all the elements necessary for making a consommé soup. At exactly half-past ten, a saucepan of enameled iron, which stood upon an ordinary stove, having reached the boiling point (100°), was placed in front of us upon an isolated table, upon which lay the disks of refractory brick. Then the hood was placed over all, and it was agreed that six hours afterward an examination and test of the contents should be made in our presence. At the hour stated, the hood was removed, and, by means of a thermometer which Mr. Berjot had provided himself with, it was found in the first place that the heat of the liquid was 81°, the loss having been only 19° in six hours. If we take into account the delay that occurred during the verifications, and the double examination that was made, we may allow that, upon proceeding regularly, the reduction in temperature would not be more than 15°. On another hand, by taking special precautions, that is to say, by slightly superheating the refractory brick and employing a double hood, or even a slightly heated woolen covering, a still greater amount of heat might be kept up, say about 90°.

After ascertaining the degree of heat, a *potage au pain* was at once mixed,

The bread was saturated in an instant, and the aroma and quality of the soup left nothing to be desired. Afterwards the meat was taken out and found to be thoroughly cooked, as were also the vegetables. The experiment was therefore perfectly conclusive in favor of Mr. du Tailles's apparatus. The director of the Normal School asserts that all kinds of ragouts, game, poultry, meat, and vegetables can be cooked in the same manner, and says the apparatus has already been used at his house more than sixty times, and always with the same success. The steward of the Normal School gives the same testimony.

As an adjunct to the kitchen, the apparatus may be employed for keeping solid or liquid food hot for twelve or fifteen hours or more. Aside from its simplicity, the hood has the merit of requiring no expense or trouble to operate it.

Pine or Forest Wool.

(Wald-Wolle. Laine des Bois.)

ABOUT the year 1840, a new and curious industry sprang up at a place called Humboldtsau, or the meadow of Humboldt, situated near Breslau, upper Silesia, which, like most novelties, had for several years to struggle with difficulties before it could be said that its position was established—that, in fact, it occupied a place in the estimation of the public, or was noticed by the medical profession. This industry consisted in the utilization of the acicular leaves, or leaflets of the pine in the production of a substance to which the name "Wald-Wolle," that is, "pine, or forest wool," was applied; and it evidently extended itself, for there subsequently arose new manufacturing at Pemda, in the Thüringer Wald; at Jonköping, in Sweden; Wageningen, in Holland; as well as in some parts of France.

Schledel, in his *Waaren-Lexicon*, mentions this substance under "Wald-Wolle," and describes it as "the fibres of the needles of *Pinus sylvestris*, also of the black pine, *Pinus niger austriaca*, fabricated after the process introduced by Joseph Weiss, of Zuckmantel, Austrian Silesia. When prepared, it resembles horse-hair, and has been used for stuffing mattresses, which purpose it seems to have fully answered, and the mattresses stuffed with it possesses an aromatic odor. In the process of its manufacture a volatile oil is obtained called Wald-wolle-oil, or forest-wool oil, which is used as an external application in rheumatic affections. The Wald-Wolle products can be procured in Berlin, Vienna, Leipsic, etc.

According to Hager, Weiss used the fibre of the pine leaf in the manufacture of paper, and observed that those workmen who happened to be afflicted with gout or rheumatism were relieved by the application of the pine-needle products. Hence their introduction as remedial agents into medical practice.

Simmonds, in his "Dictionary of Trade Products," calls the article pine-needle wool, or pine-wood wool, "a fibrous vegetable substance obtained in Prussia, by treating the buds and leaves of coniferous trees with a strong solution of carbonate of soda. The fibre so obtained is used there for upholstery purposes, such as stuffing for mattresses, intended as a protection against insects, and also for wadding; blankets are made with it, and oil and soap are also obtained from it."

The term pine-wood wool is incorrect, and confounds this with a very different article called "Holzwolle," also of German origin, consisting of the pine-wood reduced to a coarse fibrous powder, an article which, impregnated with bichloride of mercury,

is now recommended as an antiseptic dressing in surgery.

In the *Journal d'Agriculture pratique*, there is an article by Professor Charles Morren, mainly a translation from the *Bernische Blätter für Landwirtschaft*, January, 1852, "Note on the Vegetable Wool extracted from the leaves of the *Pinus Sylvestris*," of which the following is a summary: In the neighborhood of Breslau, in Silesia, in a property called the "Meadow of Humboldt," there exist two establishments—one a factory where the leaves of the pine are converted into a kind of cotton, called pine or forest wool; the other an establishment for invalids, where the waters used in the manufacture of the pine wool are employed as curative agents, affording relief to the sufferers from rheumatism. Both of these owe their existence to Herr von Pannewitz, inspector of forests, and inventor of a chemical process, by means of which there is extracted from the long and fine pine leaves a fibrous substance called forest wool, because it curls, felts, and can be spun as ordinary wool.

The wild pine, from which this wool is obtained, is much esteemed in Germany for its many valuable properties, and instead of leaving it to its natural growth, extensive plantations are cultivated, and the use Herr von Pannewitz has made of the leaves will contribute to extend the cultivation of the pine in other countries.

The acicular leaves of pines, firs, and conifers in general, are composed of a bundle of fine and tough fibres, surrounded and kept together by a resinous substance. Boiled with an alkali, the resinous substance is dissolved, when it is easy to separate the fibres, and to wash and free them from all foreign substances.

According to the process employed, and the leaves used, the woolly substance is of a fine quality, or remains in a coarser state.

In the first case it is used as wadding, in the second for upholstery purposes.

The first use that was made of this filamentous substance was to substitute it for cotton or wool wadding in quilted blankets. In 1842, the hospital of Vienna bought five hundred of these blankets, and after a trial of several years a further supply was ordered. It was observed that under the influence of pine wool no noxious insects sheltered in the beds; it was found also that the aroma was agreeable to the occupants. Soon after, the workhouse of Vienna was furnished with similar quilted blankets.

Similar articles, as well as mattresses stuffed with the wool, have been used in the Charité and in other hospitals at Berlin and in the barracks of Breslau.

An experience of five years in these establishments has proved that articles made of pine wool are very useful and durable, never troubled with moths, and only one-third the price of horse-hair. Besides, it can be spun and woven. The finest quality gives a yarn resembling hemp and equally strong. Spun and woven as cloth, it yields a fabric that may be used for carpets, horse-blankets, etc. The exhibitors of these products were awarded a bronze medal at the exhibition of Berlin, and a silver one at that of Altenburg.

Such is the account given by Prof. Morren of the pine-wool productions, but I am informed that the quilted blankets referred to by him are not now used in the Vienna Hospital, straw having superseded the pine-wool as a stuffing for mattresses.

Bentley* says: "From the leaves of this species (*Pinus sylvestris*) the substance called pine-wool or fur-wool is prepared. It is used for stuffing mattresses, etc., and is said to be repul-

sive to vermin. Wadding for medical use and cloth for various articles of dress, etc., are also manufactured from these leaves."

Martindale* thus refers to it: "Fir-wool, or fir-wool wadding, obtained from the pine leaves, is sold as a brownish-yellow fibre, in sheets like cotton-wool. It has a faint agreeable odor of the pine leaf, and is manufactured into blankets, jackets, spencers, stockings, etc."

The last two authors refer to the "source of true pine-wool, but describe an entirely different article."

In the "National Dispensatory," Stillé and Maisch refer to these products, and state that "the leaves of the different species of pine, when distilled with water, yield volatile oils, which differ from the volatile oils obtained from the resin of the same species. Such an oil is known, and to some extent employed in Germany, as Fichtennadelöl (fir-leaf oil), and the leaves, by pounding, are converted into a fibrous substance known as Fichten-wolle (fir-wool)."

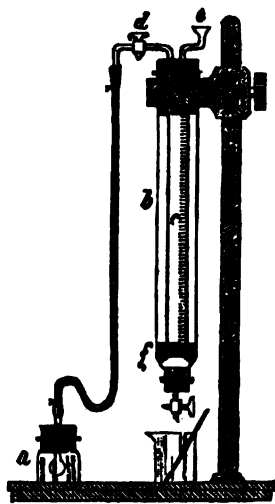
I am indebted for samples of the true pine or forest-wool (Wald-Wolle) to M. Bernardin, Musée de Melle, Belgium; to Herr Detrich, Prague, and to Dr. Maschke, in Breslau. I have also received two samples from S. Graetzer, of Carlsruhe, the depot for conifer preparations of Humboldtsau. These two differ in quality; the finer is labelled "adapted for coverlets," and the coarser, for "stuffing cushions." This substance, more or less fine, and with a faint pine odor, constitutes the article known as Wald-wolle, pine or forest wool, throughout Germany and the Continent generally, and all authorities to which I have had access agree to its origin, the pine leaf; its character, a fibrous substance, and the several uses, previously enumerated, to which it has been applied with more or less of success. Some eminent members of the medical profession on the Continent have spoken favorably of these pine-wool productions, but whether they deserve or not the high encomiums passed on them, it is nevertheless an important fact that a material, before considered almost useless, is now converted into articles of domestic utility.

There is now in English commerce a fibrous article, in sheets like cotton-wool, to which the same name of pine or forest-wool, pine and fir-tree wool, pine-leaf wool are indifferently applied. Samples of this substance were obtained from different sources, but they so clearly corresponded that they pointed to one common origin. [The microscopic examination of this substance by the author proved it to be composed of cotton.] . . .

In addition to this fibrous article now described, there is another material called "pine-foilage forest-wool flannel," hygienic flannel, also "from the forest of Thuringia," claiming public and professional patronage. It professes to be made from the fir-wool, the produce of the Black Forest fir, *Pinus sylvestris*. This is a woven material of the same color as that previously described. The warp was detached from the weft in order that they might be examined separately; the warp, when the dye was removed, turned out to be cotton. The fibres of the weft were next examined. In burning, they gave off that peculiar horny empyreumatic odor indicating an animal origin; boiled in caustic alkali, they were completely dissolved; examined under the microscope, the imbrications on the individual hairs proved previous suspicions to be correct, that this fibre consisted of wool. The woven material was, therefore, a combination of ordinary cotton and sheep's wool, the former probably rather preponderating.

These fibrous materials profess to owe their origin to the leaves of the *Pinus sylvestris*; but the venation of most of the coniferæ is simple; one single unbranched mid-rib, and the only available true fibres are the fibro-vesicular bundles of this mid-rib which are surrounded by parenchymatous tissue. The fibro-vascular tissue of the mid-rib shows, with the proper reagents, a distinct difference from that of cotton.

It would appear, then, that this "curious industry," consisting in the utilization of the leaves of the pine in the formation of a fibrous material called pine or forest wool, has given birth to another curious industry, which is endeavoring to attract the attention of the medical profession; the results of this investigation may assist in determining its true value as an addition to our remedial appliances.—*Abstract of a paper by THOMAS GREENISH, in Pharm. Journ., Nov. 15th.*



NEW AND CONVENIENT APPARATUS FOR ESTIMATING CARBONIC ACID.

DR. R. BAUR recommends the apparatus here described as being more practical and easily managed than any other.

It consists of a generator *a*, and a gas-receiver *b*. The generator *a* is a wide-mouthed bottle, fitted with a rubber-stopper through which passes the neck of a very small flask provided with a hole about half way up the globe, and intended to hold the acid necessary to decompose the carbonate. This small flask is connected, by means of stout rubber-tubing, with a graduated tube *c*, open at the bottom and contained within another larger tube. Both the inner and the outer tube are closed at the top, and only the gas delivery-tube communicates with the inner tube, while a funnel-tube *e* communicates with the outer tube. At *f*, a notched cork inserted into the larger tube holds the inner one in a perpendicular position. *D* is a three-way cock, by means of which communication may be established either between generator and receiver exclusively, or also between either of these and the external air.

The use of the apparatus will be readily understood from the following:

The three-way cock is removed altogether and the tube *b* filled up to the mark 0° with a suitable liquid, which will absorb none or but traces of the carbonic acid gas. Next a quantity of the powdered carbonate (f. i., 200 milligrammes of marble) is put into the generator *a*, and a sufficient quantity of acid into the little flask. The rubber stopper is then moistened and carefully inserted. Next, the three-way cock is inserted, so that the communication of the inside of the apparatus with the outside is still open for a few seconds. It is then turned so as to exclude communication with the ex-

ternal air, and to be open only inside. The level of the liquid in the outer and inner tube of the receiver must be still exactly at 0°; if not, it must be adjusted.

Now the acid in the little flask is made to flow upon the carbonate by inclining the bottle, whereupon the gas will be given off, and will depress the column of liquid in the inner tube, while that in the outer will rise. In order to remove the excess of pressure, the stop-cock at the bottom of the receiver is opened now and then, and enough liquid allowed to run out, until the level of that in the inner is alike with that in the outer tube. Should too much have been withdrawn, a little may be poured back through the funnel *e*. When no more gas is given off, even after agitation (the bottle must not be handled with the hand, but must be protected by felt to prevent radiation), and the two levels are exactly alike, the volume of the gas is read off, and the corresponding calculation made. For instance, at 717 millimeters barometric pressure and 15° C., each cubic centimeter of carbonic acid gas corresponds to 4 milligrammes of carbonate of calcium, supposing we had analyzed this salt. At other barometric or thermometric conditions, the usual corrections must, of course, be made.—*Journ. prakt. Chem.*, 1884, 490.

White Label Paint.

A WHITE varnish or paint for painting labels upon glass, wood, or metal, known in Germany as "Cracau's Schilderlack" (Cracau's Label-varnish) is prepared in the following manner:

Triturate 150 parts of best zinc white and 8 parts of finely powdered acetate of lead in a warm mortar with a little oil of turpentine, to a uniform mass of the consistence of lard; then add gradually, under constant stirring, 20 parts of boiling (not "boiled") linseed oil. Though the resulting mixture has a very dark color, this does not interfere with the uses of the varnish, as it will produce a perfectly white surface. Next, 90 parts of dammar varnish (made from 1 part of dammar and 2 parts of oil of turpentine), 5 parts of castor oil, and lastly 20 parts of copaiba are added, the whole well mixed, and finally diluted with about 100 parts of oil of turpentine. The varnish is transferred to a cylindrical vessel, and set aside for about one week. During this time any coarse grains of zinc white will settle to the bottom. The supernatant liquid and a portion of the sediment (about three-fourths; all but the coarse portion) are poured off, and the varnish or paint is now ready for use.—*Pharm. Handelsbl.*

Removal of Oil-Stains from Wall-Paper, Tapestry, etc.

Mix pipe-clay or fuller's earth with cold water to a paste, and apply some of it to the soiled spot, without friction, so as not to injure the design. After having remained there for about twelve hours, it is removed and the remains brushed off. The porous material, after the water has evaporated, soaks up at least a portion of the oil. If the stain does not disappear by one application, it is to be repeated.

Exports of Essential Oils from Ceylon.

DURING the last four years the export of essential oil of citronella from Ceylon has risen from 1,760,677 ounces to 4,827,020 ounces, of which latter 2,115,671 ounces went to Great Britain and 2,515,014 ounces came to America. Oil of cinnamon exports also increased from 41,719 ounces to 104,185 ounces, 71,945 ounces of which went to Great Britain and 21,600 ounces came to America.—*Pharm. Journ.*

Testing Butter for Foreign Fats.

H. BECKURTS has tested butter in accordance with Reichert's method, 2.5 grammes of the dried fat were saponified with 1 gramme of potassium hydroxide, and 20 grammes of 80 per cent alcohol. The mixture was heated on a water-bath to expel the alcohol; it was then diluted with 50 C.c. of water, and, as soon as the soap had dissolved, 20 C.c. of dilute sulphuric acid (1 acid to 10 vols.) were poured in and the mixture distilled, a platinum spiral being introduced to avoid bumping. The distillation was continued until exactly 50 C.c. were obtained. In the case of genuine butter, Reichert found that 14 C.c. of decinormal soda-solution were required to neutralize the distillate, but the author had to employ from 15.6 to 17.5 C.c., and concludes therefore that Reichert's numbers were too low. He also states that, in order to obtain concordant results, it is necessary to adhere strictly to the above proportions.—H. BECKURTS, *Dingl. Pol. J. and Journ. Chem. Soc.*

PERCOLATION WITH BOILING FLUIDS.

THE apparatus described below was devised for use in the proximate analysis of drugs to effect exhaustion with boiling ether or petroleum spirit. It has answered this purpose admirably, and has also proved exceedingly convenient in extracting the fat from milk residues, and doubtless would be of service in many similar estimations.

The apparatus consists of three parts: A, the long condensing tube; B, the percolator; and C, the flask to contain the solvent.

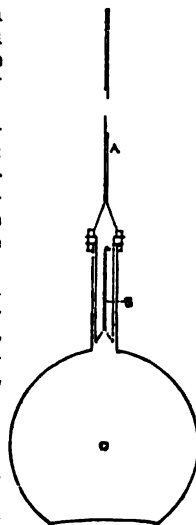
C, the flask, which may be of any desired capacity, has a long neck and thickened lip, ground flat on the upper surface.

B, the percolator, is a cylindrical tube, a little shorter than the neck of the flask, and in diameter one-eighth to one-fourth of an inch smaller than the latter. The mouth of the tube bears a thickened flange, ground on both its upper and lower surfaces. The bottom of the tube is punted and perforated, and drawn out at the centre into a fine tube curved at the apex, and nearly as long as the percolator.

A, the condenser, is simply a long glass-tube with conical, funnel-shaped mouth and thickened rim, ground on the upper surface.

A little cotton wool being placed in the bottom of the percolator, the substance to be exhausted is introduced and packed. Upon this is laid a little wool (or disk of filter paper), and finally a thin ring of cork fitting the tube somewhat tighter. A sufficient quantity of menstruum being placed in the flask, a thin ring of cork is pushed down over the percolator, and the latter fitted in the neck of the flask. Another cork disk is laid upon the mouth of the tube, and the funnel of the condenser applied to it, and the whole secured together by a little string or wire.

The action of the apparatus is obvious. With very volatile liquids it is advisable to pass the tube A through a wider tube, through which a current of cold water is constantly passing. In my hands, fitted as above described, it has proved more convenient and satisfactory than any other form of apparatus for this purpose which I have tried.—J. C. THRESH in *Pharm. Journ.*, Oct. 11th.



THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 1. WHOLE No. 127.

FRED'K A. CASTLE, M.D., - EDITOR.

CHAS. RICE, Ph.D., ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

JANUARY, 1885.

SUBSCRIPTION PRICE per year, \$1.00
SINGLE COPIES, 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustration contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

THE recent rise in the price of quinine salts is the most notable event which has occurred of late in the drug-trade, and the opinion expressed regarding it by those who are more or less familiar with the market is, that the advance is of a purely speculative character, and not warranted by any curtailment of supply. It is thought that the disposition of the retailers to lay in a stock at the low rates previously ruling may have had some influence, but this element of disturbance is not likely to be of long duration at this season of the year, and increased receipts of foreign quinine will probably soon cause a return to lower prices.

WE are pleased to learn that the series of papers on The Artistic Decoration of Drug-Stores, commenced in

November, the continuation of which will be found in this and the preceding number, are received with much favor by our readers. It can hardly be presumed that all the suggestions therein contained will be susceptible of direct application, but we believe that, in general, they will be found serviceable and will lead to an improvement in the appearance of the pharmacist's surroundings.

There is much force in the remarks of the writer of the article respecting the contrast, in many instances, between the drug-store and other business places, but this is often owing to want of means, rather than want of taste or enterprise. Notwithstanding the popular opinion that a well-equipped pharmacy is a mine of wealth, the proprietor has often to deliberate over expenditures which would receive hardly a second thought on the part of his neighbor engaged in another business. This makes it the more desirable that any design or mode of arrangement should be chosen with circumspection. The text of these chapters has been prepared by a writer who has given special attention to this subject, and the general principles of artistic management to be found in these papers will, we think, be applicable to a variety of conditions besides those embraced in the illustrations.

How is the popular prejudice in favor of the porous plaster to be accounted for? It is said that the idea originated with a workman in the establishment of a well-known maker of plasters, and that the theory of its value consisted in the supposed need for allowing, at all times, a free exhalation from the skin. The fact is, that most of the benefit derived from the use of plasters is owing to the retention of such exhalations and, at other times, to a mild degree of stimulation and the mechanical action of the plaster in securing immobility of the skin to which it is applied. Most of these effects could be quite as well attained with the use of ordinary adhesive plaster; and just in proportion to the porosity of the plaster would we fail to obtain such benefits.

The experience of many persons teaches the value of an impermeable covering in relieving local pain. In the form of cotton, flannel, oiled silk, gutta-percha and india-rubber tissue, such dressings have long been employed in cases of rheumatism, gout, and neuralgia. Even cases of joint disease and diseases of deeply-seated bone are relieved of some pain by such coverings. The heavy flannel bandage about the abdomen in cases of intestinal pain and of chamois or flannel jackets in pain of pleuritic origin, are very common popular precautions. A coating of flexible collodion generally relieves the burning pain of the first stage of shingles, and a rubber bandage will usually greatly mitigate the itching of eczema. In all these instances, it is the impermeable nature of the dressing which accomplishes the good result, and the efficacy of the remedy

will be lessened by every aperture which allows the escape of moisture. The value of moisture and a mild degree of rubefaction is also well shown in the use of the poultice. Now, who would expect benefit from a poultice which, in compliance with this popular prejudice, had been made of a material so porous as to allow a free escape of moisture from the surface covered by it? If stimulation is the object sought to be accomplished, the good effect can certainly not be increased by cutting out portions of the plaster, and the larger and more numerous such open spaces, the feebler must naturally be the effect of the remedy. The same argument will be true in the case of a plaster containing a remedy intended for absorption.

It seems, therefore, to us that for all the purposes for which a plaster can be used, one which is impermeable is preferable to one which contains perforations. There is one exception. Some time since an ingenious Western surgeon having occasion to close a gaping flesh wound, and being without the usual means for doing so, took two pieces of a porous belladonna plaster which he found in the house, and after applying them carefully to the sides of the wound, laced them together with a string, thus closing the gap, and enabling him to observe the condition of the wound without removing the dressing.

THE success of the "Campion Plan" in this neighborhood is as yet by no means assured, in spite of the faithful labors and ardent hopes of its promoters. Cutters in New York and Brooklyn are still demoralizing the public, and the managers of the plan have been obliged to apply the hatchet to one of the largest jobbing and wholesale houses on their list. Meanwhile the effect upon the retail trade has been to lead some of its members to consider whether the present troubles do not warrant such a change in their business as will eliminate all but a strictly pharmaceutical trade. The size of the city has much, no doubt, to do with the success of such an undertaking; but we believe that one of the best-paying establishments here is one that has always been conducted on this basis. Physicians send their prescriptions to it from long distances. Patients have confidence in the articles dispensed by an establishment which is devoted strictly to prescription work, and do not begrudge a living profit when they see the pains taken to insure the purity and excellence of the remedies dispensed.

No patent medicines are to be found on its shelves, no toilet articles—not even a cake of soap—are to be discovered in its limits (if we except the one in constant use). The only sponges are those which have been rendered antiseptic for surgeons' use, and the soda fountain is conspicuously absent. Prescriptions are dispensed in full view of the customers, and the proprietor, assistants, and the female cashier are always busy.

NOTES ON
PRACTICAL PHARMACY.*

(Continued from p. 225.)

MIXTURES.

THIS term is generally understood to mean fluid medicines for internal use, which consist of simple mixtures of fluid substances or solutions of extracts, salts, etc., in distilled waters or in pure water, and which are taken by the spoonful. The water in this case is not one of the essential medicinal constituents, but only the vehicle, *i. e.*, an auxiliary for giving the medicine the proper form and adapting it for use, or else it is the solvent (*menstruum*).

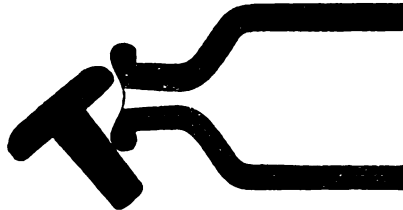
Where fluid substances are to be mixed, it is the rule [in Germany and in other continental countries] not to measure any of them, but to weigh each separately and, moreover, with few exceptions, always to weigh the smallest quantity first, and then progressively up to the greatest quantity, into the vessel, because the sensitiveness of the scales diminishes with the augmentation of the load, and because the substances to be mixed in small amounts are generally medicinally the most active. Where a fluid is to be added in a certain number of drops, the latter must be dropped into the vessel first, for should an excess of drops fall in, they can be poured back and the dropping be repeated after the vessel has been rinsed. Fluids up to 1 gramme [15 grains] are generally dropped, and according to the official Prussian directions there are counted to each gramme—of the fatty and specifically heavy ethereal oils and the tinctures, 20 drops; of the remaining ethereal oils, of chloroform, acetic ether, spirit of ether, and watery liquids, 25 drops; of ether, 50 drops. Although this measure does not approach accuracy, it is to be strictly adhered to; on the one hand, for the sake of uniformity in the preparation of medicines; on the other, to suit the dosage of the prescribing physician who is [usually] aware of this relation of the drops to the weight.

The form and shape of the edge of the vessel have great influence on the size of drops. Should the drops from some vessel be too large because of its thick and wide lip, accuracy requires that the dropping be done into a weighed vessel, and the amount thus attained be ascertained by weighing. Any excess must then be dropped back, and the number of drops marked on the prescription in parenthesis, or better, stated in a small memorandum on the prescription. Thus, in the case of tincture of opium dispensed by weight, the dropping is done as follows:

The vessel from which the dropping is to be done is first shaken with its contents, the stopper taken out, and with its lower portion, moistened by the agitation, a streak is drawn from the interior of the neck to the edge of the lip, so as to make a passage for the flow of the drops. From large vessels or those with very thick lips, the drops usually fall very large. From vessels with very narrow lips most liquids cannot be dropped at all. From these latter vessels, which are in common use as stock vessels, the dropping should be done with the following precautions: The bottle is shaken, with the moistened stopper a passage is made for the fluid to the lip of the vessel, the moistened end of the stopper is held at this point of the lip, and the drop is allowed to fall from the stopper. The drops flowing from glass stoppers are, for

obvious reasons, on an average one-fifth larger than those from the lip of the bottle, for this reason the number of drops should be reduced by one-fifth. Dropping should always be done while turned toward the light.

The weighed fluids having been united by shaking, which is done after the cork has been inserted, the mixture, if it is intended to be clear or translucent, is held toward the light and examined to see whether there are floating in it any minor impurities which occasionally are due to dust or



pieces of cork. If this be the case, the mixture should be strained. For this purpose use a straining cloth made of milling or of unbleached linen (or muslin) which must, however, not be too dense in texture, for in that case mucilaginous and saccharine liquids would pass too slowly, if at all. Flannel strainers are not practical, as, on account of their woolen fibres, they cannot be as thoroughly cleansed as those of linen, and also because they absorb and retain too much of the fluid. Strainers for mixtures are from four to six inches square in size and should be hemmed. Those for colored mixtures are kept separate. Before using the strainer, the dispenser should convince himself that it is clean. As a precautionary measure, he should beat it with his hands so as to remove any dust possibly adhering. When mucilaginous or saccharine mixtures are to be strained, it is advisable to moisten the centre of the cloth with a little water beforehand. It is self-evident that before using any new strainer it must be washed with hot water so as to free the fabric from dressing. Cleansing of the strainer after use is to be done with water to which some soda solution has been added, followed by pure water.

If there are only a few large impurities, such as pieces of cork, fibres of cloth, flakes of paper, etc., floating in the mixture, it may be passed through a piece of washed gauze or through a very loosely folded wad of washed gauze or loose glass-wool (a pellet of cotton is not quite suitable) placed in a funnel with a bulbous neck.



[Regarding a pellet of cotton, we differ from Dr. Hager, as we consider this to offer a very simple and convenient method for straining liquids which are not too viscid. A small pellet of purified absorbent cotton is so shaped that a small portion will form a point entering the neck of the funnel, while the larger portion lies against the sides of the funnel near

the neck. After the fluid has passed through the cotton, the latter retains only a very small proportion of the liquid, and is then simply thrown away.]

It would do also to use an ordinary small glass filtering funnel into the neck (b) of which a very loose pledget of glass wool has been inserted by means of the wire hook d, thus: the pledget of glass wool is placed in the funnel, the wire passed in through the opening f, and the hook e made to grasp the wool and draw it into the neck b.

ORDER OF MIXING FLUIDS.

If fluids are to be mixed which decompose each other or enter into combination, the order of mixing them is often very important as regards the quality and appearance of a mixture. An example will serve best to explain this:

Gm.		
R Liquoris Ferri Chloridi.....	5.0	gr. 75
Mucilaginis Acaciae.....	25.0	gr. 400
Aquæ destillatæ.....	200.0	f 3 64

If the mucilage be added to the solution of the iron salt, there is formed a gelatinous mass which cannot be made to form a clear solution with the remainder of the water to be added or to mix equably with it. On the other hand, a clear yellow liquid is obtained if the iron solution and the mucilage be each previously diluted with half of the water and then mixed, or if the whole amount of water be added to the chloride of iron solution and the mucilage then stirred in.

A similar rule holds good in mixing fluids containing tannin with solutions of metallic salts or alkaloids. In such cases it is always advisable to dilute both the one and the other ingredient first with a corresponding amount of the water entering into the mixture. For instance:

Gm.		
R Plumbi acetatis.....	0.25	gr. 4
Tincturæ Opii.....	2.0	℥ 30
Aquæ destillatæ.....	200.0	f 3 64
Syrupi.....	25.0	f 3 54

In this composition the sugar of lead should be dissolved in half of the water, and then the tincture of opium, first diluted with the remainder of the water added, in order to obtain a slightly turbid mixture, but not one permeated with insoluble flakes.

Gm.		
R Decocti Chondri.....	250.0	f 3 8
Tincturæ Opii.....	2.5	℥ 40
Syrupi Croci.....	50.0	f 3 14

In this prescription it is necessary to mix the tincture of opium with the syrup of saffron by agitation, and then to add to it the mucilage of Irish moss; for if the latter come in contact with the undiluted tincture of opium, flakes are formed which cannot be dissipated by shaking.

Where it is required to mix vegetable substances which are wholly or partly soluble in water, especially when they contain tannin or similar bodies, with earthy salts or metals, before the final mixture both the former substance and the salt, each separately, should be diluted with half or a part of the water or syrup which enters into the composition. We then obtain clear mixtures or such as contain a sediment which is really incorporated by agitation, for instance:

Gm.		
R Extracti Kramerie.....	20.0	gr. 300
Aluminis.....	10.00	gr. 150
Infusi Salviæ.....	200.0	f 3 64
Mellis depurati.....	50.0	gr. 770

In compounding this, the infusion should first be mixed with the purified honey, the alum be dissolved in one-half of this mixture, the other half

*The basis of this series of papers is the latest edition of Hager's "Technik der Pharmaceutischen Recentur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany, and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

rubbed up with the extract, and both fluids finally mixed; or else, the extract should be intimately united with the honey by rubbing in a mortar, and mixed with the solution of the alum in the infusion.

MIXTURES WITH ALCOHOLIC LIQUIDS CONTAINING RESINS AND OTHER SIMILAR BODIES IN SOLUTION.

These are very frequently prescribed and their preparation is easy if some syrup is to be mixed with them. In this case, the syrup is first weighed into the vessel, and then the liquid containing the resin. Both having been intimately united by agitation, the remaining watery fluids are added and mixed therewith. Saccharine juices have the peculiar property of being uniformly miscible with most of the alcoholic solutions of resins; with many resinous tinctures they even give clear, non-turbid mixtures. Where no saccharine liquid is ordered, the rule is to add the resinous tincture to the watery fluid, even if the former be ordered in small quantity, because, in that case, the precipitated particles of resin are more equally and more finely divided in the watery liquid and remain suspended therein. If the mixture be made in the inverse order, larger particles of resin are sure to separate and to adhere either to the inner wall of the vessel or to collect on top of the mixture. It should be noted, moreover, that the resinous solution is to be added to the watery liquid only when quite cold. If the latter be warm or hot, the separated particles of resin cohere into lumps which remain attached to the wall of the vessel in an unsightly manner or float about in the mixture.

Such alcoholic resinous liquids as are sometimes ordered to be added to watery mixtures by the physician are: *Tinct. Ambre*, *Tinctura Benzoini*, *Tinct. Castorei*, *Tinct. Cannabis Indicæ*, *Tinct. Colocynthis*, *Cubebæ*, *Guaiaci*, *Jalapæ*, *Lacæ*, *Lupulini*, *Myristicæ*, *Myrrhæ*, *Pini comp.*, etc. Should there be, in spite of every precaution, a separation of the resin in unsightly particles, they are collected in a previously moistened strainer, and sought to be rubbed up with some powdered gum arabic, and a few drops of water. Although receptology cautions against the mixture of alcoholic resinous liquids with watery fluids, such irregular prescriptions still occur. A very prevalent mixture, however, is the one ordered for cosmetic purposes, the so-called *Lac Virginis*, consisting of tincture of benzoin with rose-water:

	Gm.	
R Tinct. Benzoini....	10.0	f 3 3
Aquæ Rosæ.....	150.0	f 3 5

M. D. S. One tablespoonful to be added to the wash-water.

Here the tincture is added to the water, the resin separating in very minute particles, but remaining suspended in the water and forming therewith a rather stable milky fluid.

MIXTURES WITH EXTRACTS AND INSPISSATED VEGETABLE JUICES.

Extracts, unless they are of fluid or pulverulent consistence, are weighed by attaching them in the prescribed quantity to the broad extremity of a weighed silver or iron spatula, known as an extract spatula. Spatulas for taking out and weighing extracts are not round in the middle, but flat over their whole length, otherwise they would roll around during the weighing of the extract, and thus facilitate the latter's flowing off. It is not admissible to use ointment spatulas for this purpose. [In this country, round-handled spatulas are not used.] Solution is effected in a mortar with spout, termed a mixture mortar, by rubbing up and mixing therein the extract with a small, gradually increased quantity of the fluid serving as the vehicle of the preparation. If the vehicle be hot,

solution is effected the more readily, and even the soft extract, if it be one of the aqueous ones, so-called, can be quickly added to the hot fluid and dissolved in it by stirring. Many of the alcoholic extracts, such as *Extractum Cinchonæ*, *Calumbæ*, *Colocynthis*, *Physostigmatis*, *Lupuli*, *Millefolii*, *Opii*, *Quassia*, *Rhei*, *Nucis Vomica*, *Valerianæ*, after being rubbed to powder, are first brought to a syrupy consistence in the mortar by the aid of a few drops of the cold aqueous fluid, and then mixed with the remaining fluid, but always cold. If dissolved in hot water or a hot decoction, a partial separation of their heterogeneous constituents always ensues.

If very small quantities of extract have to be weighed, this is done on delicate scales upon a small piece of paper, another piece of equal size being placed as counterpoise with the weight.

If so-called extract scales with removable silver pans be available, they are, of course, made use of. The soft extract is weighed on the pan, and in the mixture mortar the pan is flooded with the menstruum.

It is convenient to weigh soft extracts and plant juices on glass plates of about $\frac{1}{4}$ to $\frac{1}{2}$ inch length, and $\frac{1}{8}$ to $\frac{1}{4}$ inch breadth. The weight (or tare) is



Extract spatula. Pill-knife or extract-knife.

marked on the glass plate by means of a writing diamond. From the glass the extract can be so completely removed with the extract knife that not even a trace of the extract remains behind. The extract knife is a sharp knife with a sharp end and flexible steel blade, with which pill masses can be removed from the mortar even to the last traces.

Powdered extracts or dry extracts must not be shaken into the mortar, but should always be first dissolved in the mixture mortar by trituration with a small amount of the vehicle. To the same class belongs also *Lactucarium* which should first be rubbed up with double the quantity of sugar, and a few drops of alcohol.

Lest any of the extract remain in the mortar, the latter should be rinsed several times with the solvent. Where solution is difficult, it should be aided or completed by the application of heat.

Extracts of a resinous character, such as *Extr. Santonicæ æth.*, *Oleoresina Aspidii*, *Extr. Granati rad. corticis*, and the like, do not dissolve in water. Should they form a constituent of a watery mixture, they must be intimately mixed with double or treble the quantity of powdered gum arabic by trituration in the mortar, and the mass then to be united with the fully cooled vehicle under continued trituration. If a syrup enter into the mixture, the mass is first mixed with it.

	Gm.	
R Ammonii Chloridi,		
Extracti Glycyrrhizæ aa	5.0	gr. 75
Aquæ destillatæ.....	100.0	℥ 100
Extr. Santonicæ æth.....	1.5	gr. 23

The extract of santonica is rubbed up with a scruple of gum arabic and the chloride of ammonium, then a concentrated solution of the licorice, and finally the cold water gradually added under constant trituration.

Hydro-alcoholic Extracts (or ex-

tracts made with dilute or weak alcohol) do not dissolve in strong alcohol and it is difficult even to mix them with it. Where such a mixture is called for, the extract is dissolved in an equal or double quantity of water, and the alcohol or the alcoholic tincture added at once under stirring. The quantity of alcohol is to be reduced by the amount of water employed for the solution of the extract. For instance:

	Gm.	
R Extracti Hyoscyami....	1.0	gr. 15
Tincturæ Valerianæ....	5.0	℥ 80
Spiritus Ætheris.....	20.0	f 3 7

According to what has been stated, this prescription would have to be altered, the ethereal spirit being only an adjuvant, as follows:

	Gm.	
R Extr. Hyoscyami....	1.0	gr. 15
Solve in		
Aquæ destillatæ.....	2.0	℥ 30
Tinct. Valerianæ.....	5.0	℥ 80
Tum adde		
Spiritus Ætheris.....	18.0	f 3 6½

However, if the extract is to be mixed with a very active ethereal tincture, such as *Tinct. Digitalis æth.*, nothing remains but to rub up the extract with an equal weight of water and the tincture, and finally to pour off the liquid from the insoluble part which any way firmly adheres to the walls of the vessel.

Inspissated plant juices and pulps, like the extracts, are dissolved in water; with the difference that these solutions are allowed to deposit in a graduate for two or three minutes, when they are carefully poured off from any sediment that may have been deposited, into the mixture vessel.

Narcotic, non-resinous extracts may be kept in stock in concentrated solutions. For ten parts of extract a mixture of twelve parts of water, four parts of glycerin, and four parts of alcohol is taken and labelled: "Take triple the quantity" (about ten drops contain 0.1 Gm. of extract). *Ext. Aconiti*, *Ext. Belladonnæ*, *Ext. Hyoscyami*, and some other narcotic extracts yield turbid solutions which must be well shaken before being dispensed. These solutions are not liable to spoil. The narcotic extract, generally dispensed only in small quantities, can be employed in solution only if it has been prepared very accurately as regards the quantities of extract and solvent, and if the number of drops which contain 0.3 of extract solution has been exactly determined by weight. The label of the narcotic extract solution, therefore, should state also the number of drops to be taken for each decigramme [or grain] of extract, for drops of the same fluid from different vessels, as stated above, are not of equal weight. Besides, it should be remembered that in Germany the employment and keeping of narcotic extract solutions for facilitating dispensing is permitted by the pharmacopœia. The narcotic extract solutions are to be made of ten parts of extract, six parts of water, one part of alcohol, and three parts of glycerin. The permanence of these solutions is not assured; they are, besides, of syrupy consistence and not easily dropped, and as the weighing according to the one-in-two proportion is more difficult with a viscid fluid than the weighing according to the one-in-three proportion with a mobile liquid, the solution of ten parts of extract in a mixture of twelve parts of water, four parts of glycerin, and four parts of alcohol is preferable.

Purified licorice extract is kept on hand in a fluid form, dissolved in an equal weight of distilled water in completely filled and not too large bottles. The bottle which is in use had better not be closed with a stopper, for cleanliness' sake; a glass capsule or a suitable porcelain ointment pot being inverted over the opening, instead.

Some acids and many alkaloidal salts, the latter previously dissolved in water, should be added only to a very dilute solution of the licorice, because the glycyrrhizin forms with those substances difficultly soluble compounds which render the mixture unsightly, and which become denser as the mixture becomes more concentrated. Mixtures of quinine with licorice are mentioned below.

Extract of opium does not dissolve in mucilage of Irish moss, infusion of marsh mallow, or mucilage of salep, but forms with them peculiar flakes; but if previously mixed with syrup or dissolved in fifty times its weight of water, it makes a nearly clear mixture with those mucilages. Should the physician add to this mixture, besides, *acetate of lead*—a not rare occurrence, the lead salt is to be separately dissolved in fifty times its weight of water before being added.

MIXTURES WITH WATER-SOLUBLE SALTS AND OTHER CRYSTALLINE SUBSTANCES.

Many salts, particularly those in very small crystals or in form of powder, such as Acetate of Potassium, Iodide of Potassium, Chloride of Ammonium, etc., easily dissolve in water without the application of heat. Therefore, they may be simply poured into the mixture and dissolved by shaking. The more difficultly soluble salts, such as Sulphate of Sodium, Phosphate of Sodium, Sulphate of Magnesium, Rochelle salt, etc., are dissolved by the application of heat. If, in addition, decoctions or infusions are prescribed, the solution is effected in the warm strained liquid obtained from the latter. The dispenser, however, must pay attention to the proportion of the quantity of the salt to that of the watery solvent. If the latter be hot, it dissolves more salt than it is able to retain in solution, and a part of the salt subsequently separates in the form of crystals. If this is to be foreseen, the salts must not be dissolved warm, but added in powder to the cold menstruum. This applies especially to Bitartrate of Potassium and Sulphate of Potassium. Borotartarate of Potassium and Sodium must always be added to the watery menstruum. If this salt be first put into the bottle and the menstruum poured over it, its particles at once cohere and form a closely-agglomerated mass which dissolves very slowly and only after oft-repeated prolonged shaking.

Carbonate of Ammonium, when entering into a mixture, must not only be invariably dissolved in cold water, but the finished mixture must be left for one-half to one hour in the open bottle before it is closed. As a rule, some carbonic acid is set free, and if the bottle be at once closed, it is liable to burst.

If, beside the ammonium carbonate, acid substances enter into the mixture, the development of carbonic acid is greater. Among the acid substances should be included also gum arabic and Symplicum Acaciae, which give rise to a free development of carbonic acid at a temperature of about 20° C. (68° F.). A mixture compounded at a low temperature, for instance at 8° to 10° C. (46° to 50° F.) develops barely traces of carbonic acid. Transferred into a temperature of a highly-heated room in a closely-stoppered bottle, the development of carbonic acid readily takes place, and the bottle bursts. Such a mixture should be heated during the preparation to about 25° C. (77° F.), although there are qualities of gum arabic which do not exhibit an acid reaction toward ammonium carbonate.

Nitrate of silver in solution should be dispensed in dark bottles. The latter must previously be washed and rinsed with distilled and not with spring water, for the latter always

contains chlorides which change the clear solution into a turbid one.

In general, the quantity of dissolved substance depends on the temperature of the solvent. The warmer the solvent the more salts it is able to dissolve. There are but very few exceptions to this rule. Caustic lime, for instance, is more soluble in cold than in hot water; in the same way Chloride of Sodium is more soluble in water at 0° C. (32° F.) than in water at 14° C. (58° F.). The variations of temperature in winter must be borne in mind. While in summer 100 Gm. of water are able to retain in solution 35 to 40 Gm. of Sulphate of Sodium, in winter this quantity is reduced to about 25 Gm. at the usual temperature of a living-room in the night time. Therefore, the careful prescription clerk will often have cases in which he should tell the patient or the messenger calling for the prescription, to keep the mixture in a rather warm place.

Chloral hydrate should always be dissolved without heat, otherwise some decomposition occurs, though slight, hydrochloric acid being set free. Hydrochloride of morphine must not be dissolved at a higher temperature than 40° C. (104° F.) in water. With a higher temperature the aqueous solution becomes more or less yellowish in contact with the air.

Many salts often dissolve in greater quantity when several of them are dissolved in one and the same vehicle, or when acids are added. Thus, for instance, Sulphate of Potassium is more soluble in solutions of Sulphate of Magnesium than in pure water. There are formed in such cases either easily-soluble double salts or other more soluble compounds. 4 parts of Sulphate of Magnesium, for instance, require for solution 7 to 8 parts of water; but in the following mixture acid is added, thus rendering the sulphate soluble in a smaller quantity of water.

	Gm.	
R Magnesii sulphatis.....	75.0	3 19
Acidi sulphurici diluti.....	5.0	70
Aquæ destillatæ.....	75.0	f 3 19
Syrupi Rubi Idæi.....	25.0	f 3 5

A similar statement applies to crystallized Sulphate of Sodium.

Where salts or other crystalline substances are to be dissolved in alcohol or alcoholic liquids, or mixed with them, they should in all cases be previously rubbed to a fine powder in the mortar. Aiding the solution by heat should be avoided unless it be specially prescribed. Chlorate of Potassium, as well as Permanganate of Potassium, should in all cases be rubbed up by themselves in the mortar, then added to the fluid mixture, and incorporated by agitation.

Where the mixture of several salts leads us to expect the separation of any constituent, the rule is to make the saline solutions as dilute as possible, within the limits of the prescription, because in that case the deposit is generally in a more finely divided condition.

[To be continued.]

A new Method of separating Arsenic from Antimony and Tin.

SOME time ago, Fischer proposed to separate arsenic from antimony by converting it into the volatile trichloride by means of ferrous chloride, and then to drive it over by distillation.

F. Hufschmidt, who experimented with this method, has found that not even seven or even ten distillations were sufficient to drive over the trichloride, excepting under certain conditions. And on further pursuing the subject, Hufschmidt found that when certain precautions are observed, a single distillation is under all circumstances sufficient to separate every trace of arsenic.

The principle of this method consists in this, that the solution or liquid containing arsenic (about 0.5 Gm., or less) is diluted with concentrated hydrochloric acid to 250 C.c., then fully saturated with hydrochloric acid gas, and finally distilled under a brisk current of the same. [For the preparation of the hydrochloric acid gas, air-dry common salt and sulphuric acid of spec. grav. 1.600 is employed. If an acid of this density is used, the gas is given off only on warming, so that the current is easily controlled by the application of more or less heat.] The trichloride of arsenic then given off is so exceedingly volatile, that nearly the whole of it passes over before a single drop of condensed liquid enters the receiver. After about 50 C.c. of the liquid have passed over, no more arsenic can be detected in the original liquid.

The enormous volatility of the arsenic trichloride necessitates special precautions. It is absolutely necessary that the gas shall be conducted into a receiver, of about 900 to 1,000 C.c. capacity, containing 300 to 400 C.c. of water or of solution of potassa, of the spec. grav. 1.100 to 1.200. In order to prevent the delivery-tube dipping into the solution of potassa, from being stopped up by the resulting chloride of potassium, causing the liquid to be forced over, a narrow glass-tube, about 11 mm. in diameter and 28 cm. long, is passed through the neck of the flask (receiver) dipping about 10 to 15 mm. into the liquid.

Since the contents of the Woulff's bottle or receiver would become strongly heated after a while, it must be properly cooled off. Hufschmidt has convinced himself that every trace of arsenic trichloride remains in the receiver, no matter whether it is filled with water or solution of potassa. It is, however, preferable to employ the potash solution, as the plain watery liquid is apt to become cloudy when the quantity of arsenic is comparatively large.

If antimony or zinc are present in the original solution, not a trace of them passes over into the distillate, which is probably owing to the fact that only a small portion of the liquid is to be distilled off to separate the arsenic.

The above process is applicable for arsenic as well as for arsenious acids. The arsenic contained in the distillate is precipitated, in the usual manner, by hydrosulphuric acid and weighed as sulphide.

The analytical results quoted by the author are most satisfactory, the quantity of arsenic found varying from that employed by not more than 0.0005 Gm. either way.—After Ber. d. Deutsche Chem. Ges., 1884, 2, 245.

Flocculent Deposits in Alkaloidal Solutions.

M. BARNOUVIN reports experiments to determine whether the deposits in alkaloidal solutions affect the dissolved alkaloid. Solutions of atropine sulphate and morphine hydrochloride in rose water (3 parts of the salt to 1,000 parts of liquid), were kept two months, at the end of which time, the weight of residual salt so closely approximated the original weight of salt that M. Barnouvin concludes that the development of flocks in alkaloidal solutions does affect the quantity or (as ascertained by other experiments), the therapeutic properties of the alkaloid present. The solution at the end of two months manifested considerable flocculence, but, from a medical point of view, the investigator says the flocks do not present greater inconvenience than would any other extraneous matter.

Characterization of Recent Medicinal Chemicals.

DR. VULPIUS, the chairman of the Pharmacopœia Committee of the German Pharmaceutical Association, proposes the following provisional text for characterizing some of the more important recent medicinal chemicals.

1. Antipyrinum. (Antipyrin.)

Colorless, columnar crystals, or, more commonly, a voluminous crystalline powder of a white color, sometimes having a reddish-yellow tint from the presence of traces of iron. Antipyrin (dimethyloxy-chinizin) is odorless, and has a slightly bitter, but not persistent taste. It melts at 110° to 113° C., is soluble in less than an equal weight of cold water, in boiling water almost in every proportion, is also easily soluble in alcohol and chloroform, but requires about fifty parts of ether for solution.

Its aqueous solution is colored red by ferric chloride, and bluish-green by nitrite of sodium; in a concentrated solution, the last-named reagent produces a separation of bluish-green crystals. A bluish-green color is also produced if a few granules of arsenious acid are dissolved, by the aid of heat, in a few drops of fuming nitric acid, and after dilution with one C.c. of water, an equal volume of dilute aqueous solution (1 in 1,000) of antipyrin added.

Antipyrin should have a mild and bitter, but not burning taste, which would be due to accompanying toluol. It should be quickly and completely soluble in two parts of cold distilled water, forming a neutral, colorless or faintly yellowish liquid, which is not altered by hydrosulphuric acid.

2. Cannabinum Tannicum. (Tannate of Cannabin.)

An amorphous, yellowish or brownish-gray powder, indifferent towards litmus, having a very faint odor of hemp, and a somewhat bitter, strongly astringent taste. When heated on platinum foil, it swells up and finally leaves minute traces of a white ash. It is almost insoluble in cold water, alcohol, or ether, and dissolves but little on warming; but it is easily soluble in water or alcohol acidulated with hydrochloric acid. If 0.01 Gm. of the substance are shaken with 5 C.c. of water and 1 drop of solution of ferric chloride, an inky mixture results. If a portion of this substance be digested with warm diluted hydrochloric acid, and the mixture filtered, the filtrate affords a whitish precipitate with alkalies, and is colored brown by iodine solution. When shaken with soda solution and ether, the latter extracts from the compound a substance, remaining behind on evaporating the ether, which has a narcotic odor, and an alkaline reaction.

Tannate of Cannabin should not have a strong narcotic odor, should not leave more than 0.1 per cent of ash when ignited on platinum foil, and should not lose more than 1 per cent in weight when treated with [how much? Ed. A. D.] cold water. It must be completely soluble in 10 parts of an alcohol containing 10 per cent of hydrochloric acid.

It should be cautiously preserved.

3. Cocainum Hydrochloricum. (Hydrochlorate of Cocaine.)

A white crystalline powder, of faintly acid reaction, having a slightly bitter taste and momentarily anæsthetizing the nerves of the tongue, which is accompanied by a most characteristic sensation upon the latter.

The salt is easily soluble in water and alcohol, but the aqueous solution is usually a little turbid. Picric acid produces in the latter a yellow, iodine solution a brownish-red, and caustic alkalies a white, crystalline precipitate of cocaine, consisting of microscopic prisms, very difficultly soluble in water, but easily in alcohol and ether. Concentrated sulphuric acid dissolves the substance with the production of much foaming, but without color; nitric and hydrochloric acids also dissolve it to a colorless liquid.

Hydrochlorate of cocaine, when ignited on platinum foil, should not leave any residue, should be soluble in double its weight of water, without producing more than a slight turbidity, and should not be colored by contact with mineral acids.

4. Paraldehyd. (Paraldehyde.)

A clear, colorless, neutral or very faintly acid liquid, of a peculiar, ethereal, but not sharp odor, and a burning and afterwards cooling taste. Spec. gr. 0.992 to 0.998. At a low temperature, it congeals to a crystalline mass, melts at 10.5° C. (51° F.), boils at 123-125° C., is miscible with six times its weight of water at 13° C., and in all proportions with alcohol and ether. The aqueous solution becomes cloudy when heated. When cooled to 10° C. (50° F.), paraldehyde becomes solid upon agitation; with 10 parts of water it should form a clear mixture without afterwards separating oily droplets of paraldehyde upon the surface. A mixture of 1 C.c. of paraldehyde with 1 C.c. of alcohol, when mixed with 1 drop of standard solution of soda, should not have an acid reaction.

Paraldehyde should be preserved cautiously, in glass-stoppered bottles, which should be completely filled, and should be protected against the light. —Pharm. Post.

Note.—The *Pharm. Journal*, in commenting upon the recommendation of Pharmacopœia Committee of the German Pharmaceutical Association, to incorporate the above four new remedies into the next edition of the German Pharmacopœia, draws attention to the fact that one of them is protected by a patent, and that two others are specialties of a particular manufacturer. In this country, the recognition of patented or proprietary medicines in the official pharmacopœia would, under no circumstances, be tolerated; and it is quite probable that the same consideration will prevent the official recognition of these substances in Germany, until the proprietary character has been removed from them.

Thalline: Another new Antipyretic.

THE reputation of antipyrin, recently introduced as a new therapeutic agent for lowering febrile temperature, has scarcely had time to become fully established, when another claimant makes its appearance, being a derivative of chinoline or quinoline, which has already yielded several other substances interesting to the medical profession.

On October 31st, Dr. v. Jaksch made a report, in a meeting of the Vienna Medical Society, on the results obtained with a new antipyretic which had been tested in a large number of cases in Prof. Nothnagel's clinic. In the course of a series of trials made with a number of new synthetical chinoline-bases prepared by Prof. Skraup, the reporter came across this substance, which is a secondary chinoline-base, and is, in chemical language, the tetra-hydro-para-chin-anisol. Its salts are all easily soluble in water, have an acid reaction, and yield green salts when mixed with solution of

ferric chloride and oxidizing substances. This latter property induced Skraup and Jaksch to adopt for the substance the *alias* "thalline." Jaksch examined three thalline salts, namely the hydrochlorate, sulphate, and tartrate; also the hydrochlorate of ethylthalline (a derivative of the primary base). He found that these substances, in doses of $\frac{1}{2}$, $\frac{1}{3}$ to $\frac{1}{4}$ Gm. (4, 8 to 12 grains) produce a powerful antipyretic effect. It would appear, however, from Dr. Jaksch's remarks, that he does not place much importance upon any of the new antipyretics, such as kairine, chinoline, and even thalline, which only lower temperature. Thalline has this advantage over kairine and chinoline, that it does not, when administered, produce any disagreeable secondary effects. —Pharm. Post.

Products of the Dry Distillation of Wood at Low Temperatures.

THREE samples of crude methyl alcohol, prepared in the manufacture of acetic acid by the dry distillation of wood at low temperatures, were examined; they were collected (a) at the beginning of the distillation, (b) after several hundred gallons had distilled, and (c) when the distillation of methyl alcohol was well advanced. These samples were subjected to fractional distillation. The most volatile portion in each case was proved to be acetaldehyde. The fraction boiling at 25-40° from (a) was shown to contain methyl formate, which has not hitherto been recognized as a constituent of wood-spirit, the presence of methylal could not be determined. The fraction 50-54° from (a) gave reactions for aldehyde and acetone, and fractions 54-56° from (a) and from (b) were nearly pure methyl acetate. The bulk of the methyl alcohol was found in fraction 65-68° from (c). Dimethylacetal could not be detected. The amount of acetone—which affects the value of wood-spirit for preparing dimethylanilin—was determined in several portions by Kramer's method; the amount found, varying from 1.04 to 3.41 per cent, is smaller than is usual in wood-spirit. Allyl alcohol could not be detected. For want of material, the high boiling oils were not completely examined; they contain furfuraldehyde, pyroxanthine in small quantity, as also methyl ethyl ketone and allylacetate. —C. F. MABERY, *Am. Chem. J.* and *J. Chem. Soc.*

Solubility of Lime in Water at Different Temperatures.

AFTER referring to the numerous conflicting statements, made by various eminent authorities, with regard to the solubility of calcium hydroxide in water, Mr. T. Maben proceeds to describe his method of investigating this subject and its results. Pure calcium oxide is slaked with distilled water. The slaked lime and water are left in contact in a flask in a bath, which is kept at a definite temperature. When the lime and water is of the required temperature, the mixture is filtered through a funnel kept at the same temperature. Thermometers were used in the funnel as well as the flask. The results are as follows:—

Tem- pera- ture.	Parts of water to dissolve 1 part CaO.	Tem- pera- ture.	Parts of water to dissolve 1 part CaO.	Tem- pera- ture.	Parts of water to dissolve 1 part CaO.
0°	759	85°	909	70°	1285
5°	764	40°	932	75°	1313
10°	770	45°	985	80°	1362
15°	779	50°	1019	85°	1388
20°	791	55°	1104	90°	1579
25°	831	60°	1186	95°	1650
30°	862	65°	1208	99°	1650

In addition to this effect of temperature, the presence of calcium carbo-

nate also interferes with the solubility of calcium hydroxide; hence it is important, when lime-water of definite strength is required, as in pharmaceutical purposes, that the lime should be kept out of contact with the air, if it is to be employed for the preparation of lime-water; the latter should also be kept in a well-stoppered bottle. One part of calcium carbonate is soluble in 40,000 of water, giving it a distinctly alkaline reaction.—*Phar. Journ.*, 14,505, and *Journ. Chem. Soc.*

Carbon Bisulphide as an Antiseptic.

In a communication to the Academy of Sciences (*Comptes Rendus*, xcix., 509) on the antiseptic properties of carbon bisulphide, M. Ckiandi Bey points out that, contrary to the statements generally found in works on chemistry, it is soluble in water at a temperature of 64° to 68° F. (18° to 20° C.) to the extent of 2 to 3 parts per 1,000. This solution arrests all fermentation, kills microbes, and is a most energetic antiseptic; it also has considerable penetrating power. When the solution is taken internally, it produces a hot and sweet taste in the mouth, then a sensation of heat in the stomach and pricking of the mucous membrane of the nose, similar to that caused by sulphurous acid, and slight dulness in the head, which, however, is not lasting. For these reasons the author recommends its use in cholera and all zymotic diseases, typhus, diphtheria, phthisis, etc. It has already been experimented with by Dr. Dujardin Beaumetz, who found that in case of typhus the diarrhoea was arrested, the stools disinfected, and the breath rendered sweet. As the cost of the solution is extremely small, M. Ckiandi Bey suggests that it might be used for watering the streets and cleansing houses, etc. For medicinal use it is necessary that the sulphide should be purified by agitation with metallic mercury until it no longer gives a black precipitate. It then has an odor which recalls that of chloroform. The solution can be made by energetically shaking the sulphide with water. Externally applied to the skin by means of a wad of cotton, it proves a most energetic revulsive, producing a pain like that by scalding with boiling water, which immediately ceases when air is blown upon the skin, so as to vaporize the sulphide remaining on it. An alcoholic solution slowly decomposes, giving rise to sulphuretted hydrogen and other compounds.—*Pharm. Journ.*

Cinchona in India.

THE present stock of 4,740,811 cinchona trees on the government cinchona plantations in Bengal, is at present undergoing an alteration in so far as it is the intention of increasing the number of Calisaya trees. Among the latter is reckoned the C. Ledgeriana (which is perhaps an independent species), and two new species, "verde" and "morada" which have lately been procured from South America by the Secretary of State for India. The percentage of quinine in these two new species is reported to be larger than that in C. succirubra. The young plants of the two new sorts, however, have suffered from the climate. During the past year 305,160 pounds of bark was collected, of which 283,240 pounds came from succirubra bark. Most of the bark was used in the country itself for the preparation of the febrifuge, of which on an average 2,728 per cent were obtained, and which cost the government 10½ rupees (about \$4.90) per pound. This product is deprived of most of the nausea-producing alkaloids, and is in form of a crystalline powder.

Cinchona lancifolia, which yields the so-called hard Carthagena bark, has perished, all but one single tree.

On Remijia, which yields Cuprea bark, no report can be made as yet.

The government strives to promote the cultivation of cinchona by the free distribution of good seeds. This encouragement is quite proper, since the financial results are very satisfactory, yielding to government a revenue equivalent to five and one-half per cent of the capital invested, without taking into consideration the saving caused by the diminished purchases of sulphate of quinine. The sums saved on the latter are already now estimated at double the amount of the original capital invested in the enterprise.—*Pharm. Zeit.*

The Last Year's Harvest of Cinchona Bark in Ceylon.

SOME months since we quoted from the Ceylon Observer an estimate that the export of cinchona bark from Ceylon would, during the next few years, amount to 8,000,000 to 10,000,000 lbs. annually. This estimate was in some quarters looked upon as an exaggeration, but the latest returns show that in the twelve months ending the 30th of September last, that quantity was exceeded, and reached the enormous total of 11,491,947 lbs.; the shipments during the last month of the season having exceeded one million pounds. It is probable, however, that this large output is the result of financial pressure which has existed in the island of Ceylon, and that it does not represent a normal harvest of bark. Our Ceylon contemporary expresses an opinion that any bark sold at under sixpence per lb. in the London market would fail to remunerate the producer, but adds that it will not be the average of cinchona trees planted, nor the age and quantity of the bark available, nor even the demand and price in the home market, so much as the financial condition of the planter, which will in Ceylon, for some years, have chiefly to be considered in making up estimates. Of the 11,491,947 lbs. exported, 9,130,826 lbs. were sent to England, 435,541 lbs. to Marseilles, 969,082 lbs. to Genoa, 863,529 lbs. to Venice, 6,946 to America, and the remainder to other countries.—*Pharm. Journ.*

The Solubility of Glass.

PROF. BOHLIG makes a communication to the *Zeitschrift für Analytische Chemie* (1884, 518) on the solubility of glass, which presents the most remarkable instance ever brought to notice. Some time ago the author made his usual annual purchase of new stock of glassware, etc., for the use of his laboratory, from the well-known firm Fr. Walther, in Stützerbach, all of which purchase was at once put away ready for use.

While making some water analyses, Prof. Bohlig noticed that water, after having been apparently saturated with $\frac{1}{4}$ normal solution of oxalic acid, when boiled for only 1 second longer in one of the new flasks, acquired an alkaline reaction, as was shown by the change of color in the indicator, and this recurred each time after renewed saturation and reboiling.

Some of the new flasks were now tried with distilled water, and it was found that 100 C.c. of it, on boiling, dissolved during every 2 seconds enough alkali to saturate $\frac{1}{4}$ C.c. of the above reagent, and that this solution went on without stoppage. Not only the flasks, but every other glass utensil of the same invoice turned out to have the same defect.

Prof. Bohlig became alarmed, because the suspicion presented itself that analyses previously performed might have been made in glassware of similar bad qualities, but a careful examination proved this suspicion unfounded.

Some samples of this invoice were

sent to Prof. Fresenius, who confirmed the statements of the author.

Since it is possible that some of this glassware may have found its way to this country, we would advise importers of chemical ware, and those who have to make use of the same, to carefully examine their stock, as an analysis laboring from such an error is liable to lead to disagreeable results.

Cultivation of the Coca Plant in the United States.

IN view of the undoubted importance and value of the alkaloid cocaine as a local anæsthetic, it is fair to presume that the supply of coca from its native home, in the Eastern Andes of Bolivia, Peru, and Ecuador, which is estimated at about thirty-five millions of pounds annually, will be insufficient to satisfy the demand. The by far greatest portion of this quantity is consumed at home, and only a comparatively small portion has heretofore been exported. But as coca yields never over one-fourth of one per cent, and is said to yield sometimes only about one-sixtieth of one per cent of cocaine, it is easy to see that it requires a very large amount of crude material to produce the quantities of alkaloid likely to be required.

If ever there was an argument in favor of manufacturing an article of this kind in its native country, such an argument is supplied in the case of coca.

Coca leaves occupy a considerable bulk and are moreover liable to deterioration by long keeping, bad stowage during the sea-voyage, etc. If an enterprising firm were to locate proper works in a suitable place in South America, as close to the main source of supply as possible and with easy facilities for export, large amounts of crude cocaine, or at least an extract of coca could be manufactured on the spot which might be forwarded to this and other countries for further purification. The great saving of expense in freight and the enriched quality of the extract or crude alkaloid, owing to the fresher raw material employed, would no doubt far overbalance the first expense of the undertaking and the cost of shipment, together with any custom duties and the further cost of purification.

Another means of obtaining the crude material with more facility, would be to cultivate the coca plant in this country. Probably, however, there will be met with the same difficulty as has been encountered when attempting to cultivate cinchona. Coca flourishes in its home at altitudes between five thousand and six thousand feet over the level of the sea, and is chiefly found in the warm valleys of the eastern slopes of the Andes, where almost the only variation of climate is from wet to dry, where frost is unknown, and where it rains more or less every month of the year. If such a locality can be found in the United States, it will be of the highest importance to try the cultivation. Should no such place be discovered in this country, it is highly probable that Mexico will offer numerous suitable localities.

Disinfectants Disinfected.

THE *Lancet* quotes from an Italian journal a statement that two wagons laden with chloride of lime and carbolic acid, on their way from Switzerland to Italy, were stopped at Cheasso, a station of the sanitary cordon, the officials refusing to make any exception in carrying out the peremptory orders that had been issued, that all imports should be disinfected. It is not stated whether either or both of the consignments were utilized, or whether a local store of disinfectant was drawn upon in this *reductio ad absurdum* of the quarantine regulations.—*Pharm. Journ.*

Formic Acid a Preservative for Honey.

SOME time since Dr. Müllenhoff arrived at the conclusion that in sealing honey cells, bees add formic acid to the honey by thrusting the abdomen with the sting protruding and a minute drop of poison adhering into the half-closed cells. The honey taken from sealed cells is said to be much more stable than that taken from unsealed cells, and Dr. Müllenhoff attributed this to a difference in respect to its contents in formic acid, which is known to be a powerful antiferment. He, therefore, treated 100 grammes of unsealed honey with 0.1 gramme of formic acid and preserved it and the same quantity to which no acid had been added under similar conditions; after a time it was found that the first sample remained unaltered, whilst the second was undergoing fermentation. He, therefore, proposes to make a technical application of this observation by adding the formic acid to the unsealed honey, and thus sparing the bees the time and labor involved in sealing the cells. Dr. Müllenhoff states that one part of 25 per cent acid is sufficient for 250 parts of honey.—*Pharm. Journ.*

The Existence of Ammonium Hydrate denied.

It is generally held that solution of ammonia contains the latter in form of ammonium hydrate NH_4OH , a cold saturated solution of which has a specific gravity of 0.912, and contains 23.226 per cent of ammoniacal gas. Even supposing that the ammonium hydrate did exist, and that it were constituted analogous to potassium hydrate, it is a very unstable compound, since the ammoniacal gas is readily eliminated by exposure to, or the passage of a current of air.

Prof. J. Thomsen, of Copenhagen, deduces from physical and thermic experiments that such a compound as ammonium hydrate does not exist. He has arrived at this result by several methods independent of each other. For instance, if the heat-units are calculated which are set free when soluble hydrates are dissolved, and if these figures are compared with the heat-unit observed during the supposed formation of the ammonium hydrate, it will be found that theory agrees with the fact in every case but that of the ammonium.

		Heat of Combination (on solution) calculated found	
Sodium	Hydrate,	77.7	77.6
Lithium	"	83.4	83.3
Thallium	"	20.4	20.0
Calcium	"	150.6	150.1
Barium	"	28.4 + x	20.8 + x
Strontium	"	158.6	158.2
Ammonium	"	54.2	21.

From this it follows that the composition of the water of ammonia differs from that of a solution of alkalies.—*Comptes Rend.*, 98, 812.

The Quantitative Determination of Morphine in Opium.

FROM 10 to 20 Gms. of the sample in question, divided as finely as possible, are boiled for a short time with 15 to 30 Gms. caustic baryta and about 150 to 200 C.c. water. The solution is separated by decantation and filtration from the residues, and the latter are boiled repeatedly with small quantities of hot water until a portion of the solution on evaporation no longer gives the reaction of morphine with molybdic-sulphuric acid. In this process too frequent a repetition of the extraction should be avoided, and the volume of the filtrate will not be gen-

erally more than 400 to 500 C.c. Through this solution, which contains all the morphine, is passed a current of washed carbonic acid until the liquid is supersaturated with the gas, and the entire mass is evaporated to dryness in a capsule on a water-bath as quickly as possible.

The residue is moistened with absolute alcohol, removed from the capsule by means of a sharp spatula, introduced into a glass flask, and extracted with boiling absolute alcohol until a portion of the extract, evaporated to dryness on a watch-glass, no longer gives a distinct morphine reaction with molybdic-sulphuric acid. For this purpose 300 to 400 C.c. are generally required. The clear, alcoholic filtrate is freed from alcohol by distillation in a small flask. When the volume of the liquid has been much reduced by pouring back the alcohol and distilling again, the residue of the alcohol is completely expelled by placing the flask in a boiling water-bath.

The residue in the flask is resinous and sticky, of a yellowish-brown color. About 15 C.c. water are added, which has been mixed with a little ammonia, and the whole is allowed to stand for some time. The dark resinous mass takes a light-brown color, and solidifies by taking up water. The transformation is promoted by stirring and rubbing with a glass rod covered with caoutchouc. The mass is then decanted through a small tared filter, and the finely divided precipitate is brought upon the filter by repeatedly pouring back the filtrate. Finally it is washed with a little ammoniacal water, large volumes of liquid being avoided.

The filter is dried at 40°, and placed in a glass funnel which can be closed below. There is then poured upon it pure chloroform free from alcohol, which is left in contact with the contents of the filter for a considerable time; the tap is then opened and the chloroform run off. A fresh quantity is then poured on in its stead, and the operation repeated until, if a portion of the almost colorless solvent is evaporated on a watch glass, the residue dissolved in diluted hydrochloric acid, and the solution mixed with caustic soda-lye, merely a trace of turbidity appears; from 3 to 5 C.c. of the chloroform solution are sufficient for this purpose.

The filter is dried and weighed, and the product obtained is crude morphine. Its color should be from a light-brown to a straw-color. It contains no narcotine, and is in many cases so pure that if covered with hydrochloric acid it dissolves with a yellow color, and the solution, if shaken, congeals at once from the formation of morphine hydrochlorate.

In all cases, however it requires to be purified. To this end the smallest possible quantity of very dilute acetic acid is poured upon the filter containing the crude morphine. If the weight of the crude morphine is from 1.0 to 1.5 Gm., a mixture of 1.5 to 2 C.c. of acetic acid at 20 per cent, with 20 to 25 C.c. of water, will be sufficient. In order to promote the solution of the morphine as acetate, the dilute acid may be heated to 30° to 50°. The filtrate is poured back several times into the filter, so as to dissolve all morphine. The filter is finally washed with 5 C.c. of water, and the yellowish-brown filtrate is mixed with a few drops of a solution of potassium ferrocyanide, filtered again through the same filter, and washed with about 20 to 25 C.c. of water. The total volume must not exceed 50 to 60 C.c. The solution obtained is rendered alkaline with ammonia, and let stand for twenty-four hours. The crystalline morphine is collected on a dried tared filter, washed with ammoniacal water, dried at 102°, and weighed.—DR. VON PERGER, in *Journ. f. prakt. Chem. and Chem. News*.

Expedients for Rendering Photographic Films Sensitive to Green, Yellow, and Red Rays.

SILVER tetrabromofluorescein is not decomposed by dilute acetic acid. It is remarkably sensitive to greenish-yellow rays. If a cadmium bromide collodion plate containing eosin is immersed in a silver solution, its sensitiveness to blue rays is very much diminished, and the action of the yellow rays is greatly increased. The addition of eosin to the collodion silver bromide containing a small quantity of silver iodide, produces a film which is sensitive to yellow and to blue rays.

In photographing colored objects, a yellow glass is introduced between the object and the apparatus, in order to diminish the action of the blue rays. With such an arrangement, Schweinfurt green and yellow appear light. The action of orange and red rays may be increased by adding methyl violet or aldehyde green respectively to the silver bromide collodion.

Wet gelatin plates containing eosin are much more sensitive to yellow rays than the dry plates.—H. W. VOGEL, *Berl. Ber. and Journ. Chem. Soc.*

The Specific Gravity of pure monohydrated Sulphuric Acid.

BINEAU found (1848), as many others before and after him, that the spec. grav. of pure sulphuric acid, obtained by evaporation, was 1.842 at 15° C. in vacuo, compared with water at its maximum density, 4° C. [This is usually now expressed thus: at $\frac{15^\circ}{4^\circ}$.]

Marignac, however, in 1853 showed that evaporation does not remove all the water from sulphuric acid, and, after having prepared the monohydrate by means of sulphuric anhydride he found for pure H_2SO_4 , a smaller number than before, namely 1.837 at $\frac{15^\circ}{4^\circ}$. It was plain, therefore, that pure monohydrated sulphuric acid increased in specific gravity both by the addition of a little water, and by that of a little sulphuric anhydride. All data requisite for arriving at this conclusion were already in the possession of Meissner and Gerlach (*Spec. Gew. d. Salzlösungen*, 1859, 37). But the fact was first clearly announced by F. Kohlrausch (*Pogg. Annal.* (1876), vol. 159, 240, 243. Also *Ergänzungsband*, (1878), viii., 675); and afterwards by A. Schertel (*Journ. prakt. Chem.*, 1882, vol. 26, 246). It appeared also that the seemingly insignificant difference between the specific gravities 1.842 and 1.837 depended upon the fact that the most concentrated acid is more prone to dissociate than one slightly hydrated. Some time in 1883, Lunge and Naef published the results of some of their investigations, in which they give the spec. grav. of pure sulphuric acid as 1.8384 at $\frac{15^\circ}{4^\circ}$ in vacuo. This

figure differs so much from those of other observers (three of whom differ only by the allowable variations of 0.0002, namely Marignac 1.8372, Kohlrausch 1.8373, Schertel 1.8371) that Prof. D. Mendelejew determined to re-investigate the subject, and to ascertain the probable causes of the error in Lunge's and Naef's determinations. Without dilating on the latter subject, which is uninteresting to any except those specially engaged in similar researches, we will merely state that Mendelejew finds the figure 1.8371 at $\frac{15^\circ}{4^\circ}$ in vacuo as being nearest to the true specific gravity of pure monohydrated sulphuric acid.—*Ber. d. Deutsch. Chem. Ges.*, 1884, 2, 536.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,392.—Quinine Assay (Laboratory).

The methods proposed some time ago by Byasson are briefly as follows (after abstract in *Journ. Chem. Soc.*):

Method I.—This is a modification of the method of the French code. An ordinary test-tube of about 15 mm. diameter is graduated with one mark (a) to hold 6 C.c.; a second mark (b) is then made above this to indicate 2 C.c. from the first mark. 0.5 gramme of the quinine sulphate is introduced into the tube, and then washed ether added to the mark (a); sufficient solution of ammonia (0.9–0.950), is finally added to exactly reach (b). The tube is then fitted with an air-tight cork and well shaken. If the quinine sulphate be pure, no trace of a flock or crystal will be visible between the layers after the liquids have separated. This method is capable of detecting from 3–4 per cent of cinchonine sulphate, 4–5 per cent of quinidine sulphate, and from 5–6 per cent of cinchonidine sulphate.

Method II.—In this method, Laurent's polarimeter is used. 0.5 gramme of quinine sulphate is placed in a flask graduated to 50 C.c., and dissolved by the addition of dilute sulphuric acid (2 per cent by volume). In this way, a one-per-cent (by volume) solution of quinine sulphate in dilute sulphuric acid is obtained. The 22 Cm. polarimeter tube is filled with the solution, and the rotatory power of the liquid determined. Commercial quinine sulphate should possess, at 15°, a rotatory power of not less than –22° on the saccharimetric scale.

When the deviation is less than –21.8, the quinine sulphate should be chemically examined by the first method. The following are the rotatory powers in saccharimetric degrees of one-per-cent (by volume) solutions of the pure sulphates of the cinchona alkaloids. The observations were made in the 22 Cm. tube of Laurent's polarimeter:—

Quinine Sulphate	–23.3°
Cinchonidine Sulphate.	–16.5°
Quinidine Sulphate	+26.4°
Cinchonine Sulphate.	+22.2°

Commercial quinine sulphate shows a deviation of –22°. A deviation of –21.8° indicates the presence of about 5 per cent of cinchonidine sulphate, and a deviation of –20° about 10 per cent of cinchonidine sulphate.

[Note.—Regarding the polarimetric method, we would add that we have no confidence whatever in its results, unless supplemented or corroborated by chemical tests. The values or rates of deviation found mostly permit only the conclusion that the examined alkaloid is practically pure, or else impure.]

No. 1,393.—Butter-Analysis (H. D.).

Public analysts have for some time past recognized the necessity of agreeing upon uniform methods of analysis and reports of results, if an intelligent use is to be made of the latter. The Bavarian representatives of applied chemistry have now also adopted this principle and have lately agreed on the

following uniform scheme of analysis of fresh or melted butter, which we translate from the *Schweiz. Wochensh. f. Pharmacie*, Oct. 17th, 1884, and which we can recommend to you as covering the ground satisfactorily.

I. METHOD OF ANALYSIS.

a. Amount of Water.—Dry 10 Gm. of butter during 6 hours on a watch-glass (or flat-bottomed capsule) with very frequent agitation. [If mechanical agitation can be employed, so much the better].

b. Amount of Butter-Fat.—Five Gm. of the butter are melted in a porcelain capsule, mixed with 20 Gm. of plaster of Paris, then dried for 6 hour. at about 100° C., and the resulting mass, when reduced to powder, exhausted with absolute ether.

c. Mineral Constituents.—Weigh 10 Gm. of the butter in a porcelain crucible, and dry, under frequent agitation, for 6 hours at 100° C. The melted, dry fat is filtered in a drying oven through a filter, the capsule and filter repeatedly washed with ether, the filter with contents replaced in the crucible and incinerated. If the ash is more than 0.5%, it must be subjected to a detailed assay, primarily for common salt, which is done by applying the proper reagents to the filtrate obtained by dissolving the ash in enough water to make 100 C.c. of solution.

d. Foreign Fats.—Five Gm. of the melted, clear-decanted, and filtered butter-fat are mixed in a flask of the capacity of 300 to 350 C.c. with 10 C.c. of an alcohol solution of potassa (20 Gm. of pure potassa in 100 C.c. of 70% alcohol) and the flask set upon a boiling water-bath until the contents are saponified. When the solution is clear, the alcohol is evaporated off, which is facilitated by blowing air through the liquid, the soap is dissolved in 10° C.c. of water, and to the solution are added 40 C.c. of diluted (1:10) sulphuric acid. The whole of this liquid is now mixed (in a flask or retort fitted with condenser) with small pieces of pumice, and exactly 100 C.c. distilled off. Of this amount 100 C.c. are filtered off, and titrated with $\frac{1}{10}$ volumetric solution of soda, rosolic acid or phenol-phthalein being used as indicators. The amount of C.c. of the reagent consumed is then increased by one-tenth, corresponding to the total amount of the distillate.

II. CRITERIA.

a. Butter of good quality should not contain more than 15% of substances not fat. If it contains 20% or over, it is no longer marketable.

b. In the test given above under *d* (Foreign Fats) not less than 26 C.c. of the $\frac{1}{10}$ soda solution should be required for 5 Gm. of butter (according to Reichert and Meissel). This limit does not hold good in the case of overheated butter-fat.

c. It is not practicable to exactly state the quantity of the added foreign fats.

d. The nature or source of the foreign fats is but rarely recognizable.

III. INSTRUCTIONS.

Samples must be taken from different portions of the suspected butter, from the surface, the middle, and the bottom. The samples must be preserved in porcelain or well-glazed stone pots.

No. 1,394.—Warburg's Tincture (O.).

It is safe to say that most manufacturers do not use the complicated and irrational formula, originally devised for this preparation. Particularly is it more than doubtful whether any of them use the *Confectio Damocratis* as one of the constituents (we gave a full list of the ingredients contained in this confection, as well as in the tincture, as originally devised by Dr. Warburg, in *NEW REM.*, 1878, p. 248). The idea of the originator was undoubtedly

to combine the quinine with a vehicle having carminative and stomachic properties. We think he might just as well have selected some Eastern chutnee or even Worcestershire sauce as a vehicle.

A very commonly-used, abbreviated formula is the following:

Aloes, Socot.	120 grains.
Confection of Rose.	30 "
Rhubarb.	30 "
Angelica Seed.	30 "
Elecampane.	15 "
Saffron.	15 "
Fennel.	15 "
Precipitated Chalk.	15 "
Gentian.	8 "
Zedoary.	8 "
Cubebs.	8 "
Myrrh.	8 "
Camphor.	8 "
Sulphate of Quinine.	75 "
Diluted Alcohol.	q. s.

Powder the drugs, except the Confection of Rose, Chalk, and Quinine, and percolate them with diluted alcohol until one pint of tincture is obtained. Reduce the Sulphate of Quinine to a fine powder, add the Confection of Rose, and triturate the whole with the tincture previously obtained, using a very gentle heat in a covered vessel, to cause the quinine salt to be dissolved. Allow to cool, mix intimately with the Precipitated Chalk, and after 24 hours filter.

No. 1,395.—Naphthalin as a Surgical Dressing (B. W. S.).

Naphthalin has been of late quite extensively used in Bellevue Hospital as a substitute for the expensive iodoform, for the antiseptic dressing of wounds. In stating this, we do not wish to anticipate any reports of results obtained by the surgeons connected with the institution. We merely wish to inform our readers that the best results are obtained if the naphthalin is reduced to powder. Now, the pure, imported, sublimed naphthalin, which is in glittering unctuous scales, cannot be well reduced to powder, except when very cold. The less pure, domestic naphthalin, however, of which the only makers in the United States, so far as we know, is the New York Coal Tar Chemical Company, 10 Warren street, can be reduced to a moderately fine powder, which, as mentioned in another place in this number, is best treated with a minute proportion of oil of bergamot to disguise the odor.

After being reduced to powder, it is apt to cake together after awhile, particularly when kept in a warm place. But a supply for a day or two may always be kept in stock.

It is not unlikely that combinations of

Iodoform and naphthalin,
Naphthalin and boric acid,
Iodoform and boric acid,

or all three combined, will be employed for similar purposes, and that the intervention of boric acid will permit the preparation of a permanent fine powder. On this subject we will have to say more after we have witnessed the experiments soon to be undertaken.

No. 1,396.—To Mask the Odor of Naphthalin (B. W. S.).

Naphthalin, no matter how carefully purified and sublimed, always has a characteristic odor, the most exact description is given by mentioning the odor in or about gas-houses. To many persons it is very disagreeable. It may be entirely overcome by adding to about 4 oz. of the naphthalin (in powder) a few drops of oil of bergamot and triturating. The two odors then blend together, and form a new and characteristic scent, which is quite agreeable and distinct from any other we are acquainted with.

No. 1,397.—Glabrina (O. A.).

This name was given by a few persons to what is now official in the U. S. Ph. under the title *Glycyrrhizinum*

ammoniatum, or ammoniated glycyrrhizin. We refer you to the U. S. Ph. for information.

No. 1,398.—Florida-water (Mulum). We have several formulas on file, of which the following is probably the best:

Oil of Bergamot.....	2 drachms.
" Lavender, Mitcham 2 "	
" Lemon.....	2 "
" Neroli.....	10 drops.
" Rose.....	1 drop.
Orange Flower Water.....	3 oz.
Rose Water.....	3 "
Cologne Spirit.....	2 pints.

No. 1,399.—Benzol and Bromine; Hydrobromic Acid (M.).

All halogens are capable of replacing one or more of the hydrogen atoms in benzol (C_6H_6). Under certain circumstances, however, addition-products are obtained.

For instance, chlorine gas passed through benzol while exposed to sunlight or passed through boiling benzol, forms an additional product: benzol hexachloride, $C_6H_5Cl_6$. But if chlorine gas is passed through benzol containing iodine, chloride of antimony, or pentachloride of molybdenum, or chloride or bromide of aluminium, or of zinc, substitution-products are formed, the chlorine displacing some of the hydrogen, which combines with free chlorine to hydrochloric acid.

With bromine, benzol yields, on exposure to sunlight, benzol-hexabromide, $C_6H_5Br_6$; a mixture of bromine and benzol exposed to diffused light, however, develops chiefly benzol-monobromide, C_6H_5Br . On heating bromine with benzol, particularly in presence of a little iodine, substitution-products are produced, but these are most easily and energetically formed if some bromide of aluminium is present. In this case, hexabromobenzol, C_6Br_6 , is formed even at $0^\circ C.$ ($32^\circ F.$ if benzol is added slowly to an excess of bromine containing some of the above salt).

In what special manner the presence of this or of other salts brings about the energetic action is not yet quite understood.

This last-named reaction could be utilized for the preparation of hydrobromic acid on a large scale.

Iodine alone does not react with benzol even when heated. That iodobenzol cannot be thus produced is shown by the fact that hydriodic acid when brought in contact with iodobenzol regenerates the benzol. But iodine substitution compounds may be formed by heating benzol with iodine and iodic acid.

The chief point in the preceding résumé (based chiefly upon Laubenhimer) of interest to you is the formation of hydrobromic acid. It should be a comparatively easy matter for you to try the process on a moderate scale.

No. 1,400.—Opium, Pharm. Mex. II. (Gonz.).

The new Mexican Pharmacopoeia prescribes that opium for pharmaceutical purposes should contain at least 10% of morphine. An upper limit is not declared. The process of assay there given, which is merely stated to be the one most generally used, is as follows:

Fifteen Gm. of opium, in small pieces, are extracted in a mortar with 60 Gm. of alcohol of 71%, the liquid is expressed, and the residue again extracted with 40 Gm. of the same alcohol. The united liquids, in a wide-mouthed flask, are treated with 4 Gm. of water of ammonia (sp. gr. 0.920), and set aside for 24 hours. At the end of this time, the morphine and narcotine have crystallized out. The liquid is poured off, the crystals washed, first with water, to remove any ad-

hering meconate of ammonium, and afterwards with ether to dissolve the narcotine. The residue is then dissolved in boiling 90% alcohol, the solution filtered and set aside to crystallize. Finally the residue is dried and weighed.

[In our opinion and experience, this is not the best process that could have been adopted. Particularly the last operation, dissolving the morphine in boiling alcohol, and allowing it to crystallize, causes loss, which may, however, be made up by applying a correction for the amount of morphine remaining in solution. But even the exhaustion of the original opium is not completed by two treatments with alcohol.]

No. 1,401.—Syrup of Chlorhydrophosphate of Lime (or Calcium) (E. J.).

This is officinal in the French Pharmacopoeia, under the title *Sirop de Chlorhydrophosphate de Chaux* (Syrupus cum Chlorhydrophosphate calcico):

	Grammes.
	Parts.
Phosphate of Calcium	12.5
Hydrochloric Acid (sp. gr. 1.171)	q. s.
Distilled Water.....	340
Sugar.....	630
Spirit of Lemon.....	10

Carefully mix the phosphate of calcium with the distilled water to a uniform milk, then add just enough (about 8 Gm. or parts) hydrochloric acid to dissolve the salt; next add the sugar, in coarse powder (granulated), and dissolve with a gentle heat. Filter, and add the spirit of lemon.

The phosphate of calcium is the di-calcic phosphate obtained by precipitating the officinal phosphate of sodium with chloride of calcium. The spirit of lemon is prepared by macerating 1 part of fresh lemon peel with 2 parts of alcohol of 80% for eight days.

No. 1,402.—Rapid Bleaching of Fats and Oils (Natchez).

We believe the following abstract of a paper by M. Herzog in the *Techniker* will give you the desired information.

Fatty oils and solid fats are subjected to a preliminary treatment by being mixed in large vats with 2-3% of common salt and 25-30% of cold water, and being well agitated for about 10 minutes. After standing at rest for 24 to 48 hours, a portion of the impurities has separated together with the water and salt. The supernatant oil is then removed to another vat, and there once more thoroughly agitated with a fresh lot of cold water. After some 6 or 8 hours, the oil is again separated, and is ready for further treatment. This preliminary washing with salt and water is said to be specially valuable and important in the preparation of fine table oils, but may also be used in the case of linseed, cod-liver, and other oils. If a current of electricity (so says Mr. Herzog) be conducted, during the mechanical agitation, through the mixture of oil, water, and salt, the oil becomes at the same time bleached, owing to the decomposition of the chloride of sodium and the formation of strongly bleaching secondary compounds. [The author gives no working details for this portion of the process.]

In the case of fats or oils which are prone to become rancid, it is advisable to add 2 to 3 per cent of bicarbonate of sodium during the preliminary treatment. Instead of washing the oil for the second time with cold water, it may also be treated with steam conducted into the oil in a fine spray, the average time of such treatment for cotton-seed oil being 5 to 10 minutes, for rape-seed oil 15 to 20 minutes, and for fish-oil 30 minutes. By this treatment, the rancid constit-

uents are removed, while the mucilaginous portions are precipitated. In place of steam, heated air may be blown through the oil, previously mixed with 20% to 30% of hot water, for 5 minutes at a time, with intervals of 2 to 3 minutes. If the oil thus prepared is now again filtered and allowed to stand for some time, a pure product of agreeable, sweet taste, and light, pale-yellow color is obtained. For filtration, endless filtering paper is to be preferred. This is laid upon the bottom and over the ribbed sides of the filtering vessel. After having been once used, the paper may be pressed, washed, and may then again be used, in form of pulp, for lining the filtering trough.

In the preliminary treatment of varnish, illuminating or lubricating oils, these are mixed with 2% of common salt dissolved in 15 to 20 per cent of hot or boiling water, then 1% to 1½% of hydrochloric acid diluted with 15% to 20% of water is added, and the mixture heated by a current of steam to about $120^\circ F.$, which is passed through it in intervals of about 5 minutes. The oil is then allowed to separate. In some cases it is of great advantage to use permanganate or chlorate or bichromate of potassium in combination with the hydrochloric acid. For every 100 pounds of oil about ½ pound of any of the above-named salts, and 1½ to 2 pounds of common salt, dissolved in a very small quantity of water heated to $120^\circ F.$, is used. The oil is gradually mixed in a suitable vat with the salt solutions, at a temperature of 120° - $130^\circ F.$, and 2% to 3% of hydrochloric, or 1% to 1½% of sulphuric acid (properly diluted) are added under constant stirring, and very slowly (in the course of one hour).

The mixture is then diluted with 30% more of warm water and allowed to stand at rest. The separated oil is washed several times with pure water containing a little soda, and finally with steam.

No. 1,403.—Tartrate of Iron and Potassium (and other scaled salts of Iron) (M. V.).

There appears to be some ground for your statement that the formula given in the U. S. Pharm. does not yield as nice and soluble a product as it ought to. Theoretically it may be regarded as correct, but practically it could be, and no doubt will be improved. This subject was some time ago investigated by Mr. C. N. Lake (in a thesis presented to the School of Pharmacy of the University of Michigan), and we give here an abstract, taken from one of our exchanges, of the salient points of the paper:

I.—Pyrophosphate and Phosphate of Iron.

Much difficulty is encountered in making scales of pyrophosphate and phosphate of iron if the Pharmacopoeial formulæ are followed. Although these formulæ appear to be correct in theory, in practice they fall far short of giving satisfaction. In making either of the phosphate scales, we want them of an apple-green color, readily soluble, and of such a consistence that the solution will scale easily. And these desired qualities are not secured by following the formulæ of the U. S. Pharmacopoeia. [U. S. P. form. for ferri phosph. is to dissolve ferri cit. 5 in distilled water 10, and add phosphate of sodium 6. Evaporate and spread on glass. For pyrophosphate the formula is nearly similar, only pyrophosphate of sodium is used instead, in slightly less proportion.] If, in making pyrophosphate of iron, 10 parts of crystallized pyrophosphate of soda are used to 9 parts of citrate of iron, as directed by the Pharmacopoeia, the resulting solution does not scale well, and the scales, such as they are,

dissolve scarcely at all. By using from 7.6 to 8 parts of crystallized pyrophosphate of soda to 9 parts of citrate of iron, these difficulties are entirely avoided, and a product, easily scaled, readily soluble, and of an apple-green color is obtained. It is best, in commencing this preparation, to add the smaller amount of pyrophosphate of soda first (7.6 parts), and then if the characteristic green tint is not secured after evaporating to the right consistence, small quantities of pyrophosphate of soda may be added until the proper color is reached. The same process for coloring can be used for phosphate of iron, and by so doing the trouble is averted which would be sure to follow if the Pharmacopoeial formula is closely adhered to. The amount of crystallized phosphate of soda necessary for successful operation is found to be from 4 to 4½ parts to 5 parts of citrate of iron. If the Pharmacopoeial amounts of pyrophosphate or phosphate of soda are used in making these scales, the product, besides being insoluble, turns white in scaling or on standing. This change in color is evidence that too much of either the phosphate or pyrophosphate has been used.

II.—Tartrate of Iron and Ammonium.

One of the U. S. Pharmacopoeial formulæ which seems most in error is that for tartrate of iron and ammonium. [Sol. tersulph. iron 90, water 900, added to water 180 and aqu. ammoniæ 72. Strain, and mix with water 1,000. Wash away all sulphates. Mix acid. tart. 30 in water 130, neutralize with ammon. carb., and add another acid. tart. 30. While at 60° combine as much of the iron magma as will dissolve.] By the generally-accepted theory for the reaction when hydrate of iron is added to a half-neutralized solution of tartaric acid, we find that the parts of tartaric acid should be 58 instead of 60 for every 90 parts of solution of tersulphate of iron. But, besides this, it was found in a recent trial that with the 58 parts of tartaric acid, one-half of which was neutralized with ammonia, twice the amount of ferric hydrate was added, and still the last addition was readily dissolved. More could probably have been added, but the filtered solution was now evaporated, and scaled, giving a first-class product. An improvement on the Pharmacopoeial method would be in adding half the powdered acid directly to the ferric hydrate, letting it dissolve what it would, and then to this add the solution of the remaining half of the acid neutralized with ammonia—the first part of the neutralization being effected with carbonate of ammonium, so as not to increase unnecessarily the amount of the solution; but, when near the end, aqua ammoniæ can be used to better advantage in bringing the solution to the neutral point.

No. 1,404.—Testing Oil of Peppermint (U. A.).

The presence of essential oils of the pine family, in oil of peppermint, may be ascertained by Heppe's test, by means of nitroprusside of copper. Two samples, one of the suspected, and one of perfectly pure oil, are heated to boiling, on a sand-bath, at one and the same time and for an equal period, with some nitroprusside of copper. The adulterated oil becomes lighter colored, and the copper compound retains its grayish-green color, while the pure oil becomes yellowish-brown; and the copper compound contained in it, dark-green or almost black. On pouring off the oil and adding alcohol to the salt, the difference in color between the two becomes still more noticeable. It is, however, impossible to tell by chemical tests what

kind of "coniferous" oil has been added, since they all yield the same reaction.

No. 1,405.—Beef Peptone (Dr. W. S. W.).

Good beef peptone is composed mainly of the artificially (or naturally) digested albuminoids or protein substances, such as make up the largest portion of the substance of the animal or human body, and are absolutely essential for its sustenance and nourishment. Artificial peptones, or preparations which contain the albuminoids in a partially or entirely digested form, are important agents in many diseases, and are recognized as such by the medical profession.

There is no general standard for artificial peptones. Their value depends upon several properties, among which are 1st, its complete solubility, 2d, the proportion of moisture to solids, 3d, the percentage of nitrogen.

As we are unable to quote the composition of all the commercial peptones in the market, we will quote only that of Kemmerich, of which Prof. Fresenius has made an analysis. Kemmerich's peptone contains:

Dry substance.....	65.83
Moisture, given off at 120° in a current of hydro- gen.....	34.17

100.00

Total nitrogen.....9.93%
100 parts of the beef peptone contain
of inorganic constituents:

Potassium.....	2.8492
Sodium.....	0.7635
Lime.....	0.0338
Magnesia.....	0.1794
Oxide of iron.....	0.0105
Phosphoric acid.....	2.3393
Sulphuric acid.....	0.0078
Chlorine.....	0.6382
Silica and insoluble resi- due.....	0.0180

6.8397

Deducting O for Cl.....0.1440

Total.....6.6957

The quantity of sulphur in organic composition (albuminoids) is 0.2466%.

According to Prof. J. König, there are soluble, of this peptone, in eighty-per-cent alcohol, 27.69 parts (consisting of 22.18% of organic and 5.51% of mineral matter); insoluble: 41.69 parts (consisting of 39.51% of organic and 2.18% of mineral matter).

No. 1,406.—Mending Mortars (J.).

The following two communications to the *Chemist and Druggist* may give you a chance of accomplishing your object. We have not yet had an opportunity to try them:

Henry J. Deacon, of Beckenham, writes:

"Some years since, having a Wedgewood mortar broken in halves, I rubbed some calomel down with strong mucilage, and used this cement for my mortar, taking care to get the edges as close as possible together by means of a string around mortar just above rim at base.

"Mortar was put aside for some months. So thoroughly did this answer that we used the mortar indiscriminately for some year or two, and the last I heard of it was to the effect that it was as good as ever.

"It will be seen that one great advantage, beyond its endurance, is that of cement being in color like the article mended, more especially if very white gum Arabic is used."

A. Patterson, of Glasgow, writes on the same subject:

"Like most of my brethren in trade, I some time ago had the misfortune to have broken a good-sized Wedgewood mortar, and being unwilling to throw it out, it was laid aside to be cemented at some convenient season. When the convenient season arrived, the broken

mortar was made the subject of a series of experiments, first with one of the recommended cements, then with another, and, lastly, with a strong shellac varnish, but none of these stood the test of regular counter-work, and one after another failed in realizing my hope that now the mortar was mended. Having read among my collection of recipes that equal parts of shellac and guttapercha melted, and applied hot, made a good lasting cement, I resolved to give this also a trial, and, joy of joys, my broken mortar became a whole one. This cement is, of course, a colored one, but for such a purpose as the one I used it for it is a good one. But, like many other good things, there is a *but* in its use. The but I found to be the great difficulty of melting and applying the melted mixture of shellac and guttapercha. It requires a strong heat, and when it is heated sufficiently it becomes so stiff that its application is a difficult matter. I became impressed that if this difficulty could be removed, a good strong cement would be the result. So, by the way of experiment, I took a small quantity of shellac, and covered it with methylated spirit, allowing it to stand till the shellac was dissolved. I now procured a small tin of guttapercha solution, which is used for mending boots and shoes, and mixed equal proportions of this solution with my solution of shellac. I had now a mixture which was easy of application with an ordinary camel-hair pencil, and possesses the good properties of the less-easily applied mixture of solids. The article to be cemented should be heated for short time before a fire, and the bottle containing the solution of shellac and guttapercha should be placed in warm water a few minutes before using."

BIBLIOGRAPHY.

THE CHEMISTS' AND DRUGGISTS' DIARY, 1885.

In addition to the usual matter, this annual contains a series of articles on practical dispensing, based upon Dr. Hager's treatise, and supplemented by several English writers. Either the diary or the advertisements relating to every branch of the trade would alone be a valuable addition to the desk of the British chemist.

THE PHYSICIANS' VISITING LIST for 1885.

Thirty-fourth year of its publication. Philadelphia: P. Blakiston, Son & Co. \$1.00.

This old and well-known pocketbook contains, in its latest form, an almanac, table of signs, Marshall Hall's ready method in asphyxia, poisons and antidotes, metric system of weights and measures, posological table (Oldberg's), table for calculating the period of utero-gestation, list of new remedies, Sylvester's method for artificial respiration, diagram of the chest, and blank leaves for all the records commonly kept by physicians.

THE PHYSICIAN'S POCKET DAY-BOOK.

Designed by C. HENRI LEONARD, M.A., M.D. Detroit: The Illustrated Journal Co. Issued annually, \$1.00.

This is one of the most ingenious, comprehensive, and economical pocket day-books for physicians' use with which we are acquainted. It has no text accompanying it, other than that which relates to its use as a record-book; has a broad flap, which avoids the necessity for a tuck or elastic band, and a pocket for cards or prescription blanks. The form for keeping accounts which it provides is well calculated to lessen the labor and enhance the accuracy of this portion of a doctor's duty.

VISIONS OF FANCY: A Poetical Work by N. M. BASKETT, M.D. St. Louis, Mo.: Commercial Printing Co., 1884. Pp. 109, 8vo.

THIS is a collection of forty-four short poems on a variety of subjects, but mainly of a pathetic nature, and, as a whole, of very creditable character.

DOCTRINES OF THE CIRCULATION: A History of Physiological Opinion and Discovery in Regard to the Circulation of the Blood. By J. C. DALTON, M.D., Professor Emeritus of Physiology in the College of Physicians and Surgeons, New York, and President of the College. Philadelphia: Henry C. Lea's Son & Co., 1884. Pp. 296, 8vo.

THE author traces the subject from the time of Aristotle to that of Leeuwenhoek and Ruysch; referring, in course, to the teachings of Praxagoras, the School of Alexandria, Galen, Mondini, Carpi, Vesalius, Servetus, Columbo, Cæsalpinus, Fabricius, and Harvey; the discussions awakened by Harvey's writings, and finally, to the visible proofs of the circulation. The extracts from ancient authors are numerous, but the whole are combined with the skill and elegance which have made Dr. Dalton's writings so popular. The narrative well illustrates the difficulties which beset the early studies of anatomy, and should be read by every physician who aims to be well informed in that branch of medical science.

DRUGS AND MEDICINES OF NORTH AMERICA (quarterly) by J. U. and C. G. LLOYD. Cincinnati, Ohio, October, 1884.

THE third part of this work comprises the text of *Ranunculus bulbosus* and relates also to *Caltha palustris* (Marsh Marigold) and *Hydrastis canadensis* (Golden Seal), which latter is continued throughout the fourth part, and forms the most interesting chapter thus far presented. It is beautifully illustrated and is as interesting as usual.

A supplement to this work is also published, containing omissions and new matter not embraced in portions already published, as well as queries in regard to matters to form part of subsequent numbers of the principal work.

XHMEIA τῶν οὐρῶν καὶ τῶν οὐρολίθων ἐν ἐφαρμοσίᾳ εἰς τὴν κλινικὴν. Ἰπὸ ἱερωγίου Ν. Ζαβιτσάνου. Ἐν Ἀθήναις, 1884.

[Chemistry of the Urine and of Urinary Calculi, in its Application to Practice, by GEORGE N. ZABITZANOS. Athens, 1884, pp. 232.]

A VERY handy and practical treatise on the subject, which labors only under the disadvantage of the stubbornness of the modern Greek against the introduction or assimilation of modern chemical terms, the larger proportion of which lose their intelligibility or perspicuity by forced translation. This is a serious matter for the Greek, as well as eastern nations in general; and, though most of the scholars read and write French, yet it prevents the general public or those unfamiliar with other European languages from getting a thorough insight into the relation existing between chemical substances, which is (in western languages) so largely assisted by a judiciously arranged nomenclature.

THE NEBRASKA DRUGGIST is the title of a new Monthly Journal of Pharmacy, Materia Medica and Business. Published by the Nebraska Druggist Co., of Omaha, of which J. H. Penfold is manager. Six and a half of its twenty-four pages are reserved for literary matters, the rest contain advertisements and price quotations. The subscription price, per year, is \$1.00.

MEMORIA SULLA CURA DELLO SCOLAMENTO DELLA RETINA (Iridectomia). (By DR. RAFFAELE CASTORANI. Naples, Italy, 1884, pp. 15.)

UN VIAJE A CEREBROPOLIS: Ensayo Humorístico de Dinamica Cerebral. (By DR. D. JUAN GINÉ Y PARTAGAS. Barcelona, Spain, 1884, pp. 124, sm. 8vo.)

DEL ESPIRITU DE LA CIRURGÍA CONTEMPORANEA. (By DR. D. JUAN GINÉ Y PARTAGAS. Barcelona, Spain, 1881, pp. 54, 8vo.)



(The doctor having advised the administration of a five-per-cent solution of carbolic acid.) "Here, boy! Take this and get a twenty-five-per-cent solution of carbolic acid. (Aside.) What is the use of being stingy in such a matter?"



WAITING FOR THE DEVELOPMENTS OF SCIENCE. "Well, Missus Pease, I'll call agin nex' month." "Laws, Doctah, no 'sooner nor then? Ain't he mighty sick?" "Misses Pease, yo' husban' has microbes, but dey ain't prackable yit. An' does yo' s'pose de philosophers can 'quire sich triumphs in a day? I tell yo' yo' has to wait till dey fin' out sumfin' of mo' prackable impatience 'fo' I can 'telegently pusrbe to' yo' husban'."—[The doctor keeps himself well posted in all matters pertaining to his profession.]

PROCEEDINGS of the Indiana Pharmaceutical Association. Indianapolis, Ind., 1884, pp. 91, c.

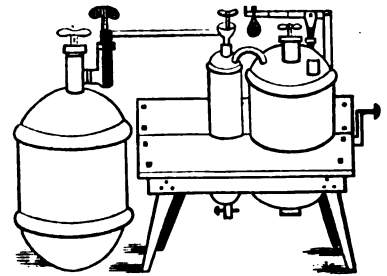
ANNALS OF SURGERY: A Monthly Journal Devoted to Surgical Science and Practice. Edited by L. S. PITCHER, M.D., of Brooklyn, N. Y., and C. B. KEITLY, F.R.C.S., of London, Eng. 1885, St. Louis and London. \$5 per year.

MUMPS AS A CAUSE OF SUDDEN DEAFNESS. By LEARTUS CONNER, A.M., M.D., of Detroit, Mich. Pp. 9, 8vo, Reprint from *Amer. Jour. of the Med. Sci.*, October, 1884.

PERSONAL.

James T. Lukens, the oldest manufacturer of carbonated water in fountains in this country, and founder of the house of C. T. Lippincott & Co., of Philadelphia, died on the 30th of Nov. last.

On the 23d of April, 1832, Mr. Lukens formed a partnership with P. C. Laning, for the purpose of manufacturing soda (or mineral water as it was then called). He began business at the corner of Eighth and Mackinaw Streets, and furnished the first fountain, on the 28th of April (13 gallon at \$2.00) to Edward Needles, an old and well-known druggist. On the books of the earlier years of the business are the names of such druggists as Edward Needles, Dilwyn Parrish, Joseph Turnpenny, P. C. Oliver, Dr. David Wayne, Henry C. Blair, and later Wm. B. Webb and the well-known confection-



er S. F. Whitman. In those days the gas was generated in a wooden tub, and after passing into a gasometer was pumped into the fountains, by hand. The fountains (copper, egg shape, without handles or feet) were agitated on a small cradle. In 1834, Mr. Laning sold his interest to Mr. Lukens, who carried on the business alone until 1838, when Mr. John Lippincott bought a half interest. This partnership lasted until 1843, when Mr. Lippincott bought out Mr. Lukens. John Lippincott retired in 1865, selling out to Chas. Lippincott, the present head of the house.

Mr. P. C. Laning was the original inventor of the apparatus for generating gas under pressure for charging portable fountains, or what is better known as the American system for aerating soda water. The generator was invented between 1832 and 1834.

John Frey, Superintendent of the General Drug Department Bellevue Hospital, died at the age of seventy-seven, at his home in the hospital. He has been sick to a greater or less extent for more than a year. Repeated colds developed into chronic bronchitis, which with heart complications that lately appeared were the immediate cause of death.

Mr. Frey was born in London in 1807. His father was a well-known Israelite, who renounced the Jewish faith, and was the first of his race to unite with the Established Church of England. Mr. Frey came to New York in 1814 with the other members of his family and was first apprenticed to learn the printer's trade. He became dissatisfied with this vocation, and in 1827 was apprenticed to an apothecary in Sullivan st., which was then in the outskirts of the city. He afterwards acquired an interest in the business and remained there until 1849, when by the advice and assistance of Dr. Valentine Mott he was appointed to the position which he held until his death. Bellevue Hospital at that time was small and was a part of the County Poor House. Mr. Frey performed his duties in such a creditable manner that when in 1867 the Drug Department of Bellevue was enlarged so as to furnish the medicines for the seventeen public institutions, as well as for all the public dispensaries, he was retained in charge and received the commendation of the Commissioners of Charities and Correction, for his faithful stewardship. Mr. Frey was a trustee of the College of Pharmacy, an officer of the Microscopical Society, member of the American Institute, of Olive Branch Lodge of Odd Fellows No. 31, and of Palestine Encampment, I. O. O. F.

American Druggist

Vol. XIV. No. 2.

NEW YORK, FEBRUARY, 1885.

Whole No. 128.

[ORIGINAL COMMUNICATION.]

INTERIOR ARCHITECTURE AND DECORATION OF DRUG-STORES.



COMMERCIAL and professional success in the case of a druggist may depend largely upon the interior architecture and decoration of his establishment. Through the liberal allowance of window space accorded to the street-fronts of most drug-stores, the passer-by receives at a glance a complete impression of the character of the interior. If that interior be clean, tastefully arranged and constructed in such a way as to offer an effect of harmony and

symmetry, the wavering mortal without, is, by some mysterious mental process, suddenly moved to remember that he needs a cake of soap, a sponge, a bottle of tooth-powder, or at least a glass of soda water from the neat and artistic fountain whose polished silver trimmings gleam out a welcome from the marble counter. If, on the other hand, the interior have that indescribable air of slatternliness and neglect which so many drug-stores possess, if the arrangement of goods be careless and without sense of fitness, if even the architectural impression of the whole be unattractive, the average sensible man will pass on and seek a spot in the retail drug trade where the amenities are treated with more consideration. Externals are generally safe guides as to the character of internal matters. Experience proves that a badly-kept drug-store generally contains inferior goods of every description, from high-priced medicines down to five-cent glasses of mineral or soda-water.

Elaborate interior architecture and costly decorations do not come within the reach of every druggist. In many cases, indeed, they would be the height of pretentiousness and vulgarity. The essentials of good architectural arrangement and decoration are all, however, within the limited range of business practicalities. A nice adjustment of means to ends, a proper sense of fitness, a desire to place every object in its most advantageous position with relation to other objects, the economy of space, the judicious application of the primary decorative principles of form and color, are all matters with which every individual can deal according to his lights.

In designing the plan of a drug-store, the first idea of the architect should be to give as much space as possible. The same idea should prevail in the re-modelling of a drug-store or the adaptation of rooms or shops used for other purposes to the exigencies of a druggist's establishment. If two street-entrances can be afforded, so much the better for the druggist. The more window-space fate and the landlord have provided, the better for his business. Let not the druggist, however, who is relegated to the basement by circumstances, despair. Let not the pharmacist whose street-frontage is meagre bewail his lot. Let such as these defy fate by disposing the space accorded them to the best architectural advantage, and

by decorating it as tastefully as circumstances will permit, taking care also to consider the convenience and comfort of the customer. A basement drug-store in which the senses of the entering purchaser were pleased and gratified, would soon rival in popularity with one on the street level with wide windows in which the customer had reason to feel himself ill at ease. "A place to sit down" is one of the constant demands of drug-store customers, and it too often remains ungratified. When the "place" exists, it is frequently better adapted to a bar-room than to a drug-store. The druggist who provides seats which can be occupied without danger to the deli-

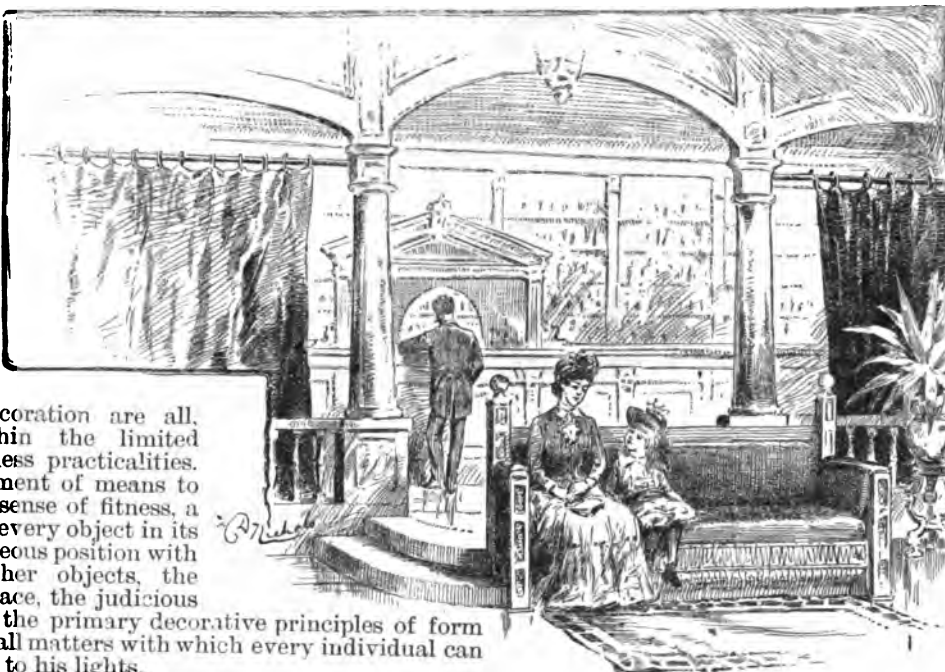


cate wearing apparel of ladies, children, and nice young men, is a public benefactor and will reap his regard in the shape of a large soda-water trade. As matters stand, there is generally in the average American drug-store, one chair, with a forgotten wet sponge on the marble

floor at one side, a cuspidor at the other. This seat is apt to be found, by the weary customer, monopolized by the drug-store cat, who objects to being dislodged from her position.

Odors should be carefully considered by druggists. The sickening odors of certain drugs, the equally offensive odors of cheap scented soap, and cheap perfumes, are enough to deter fastidi-

ous people from entering drug-stores. One may safely gauge the class of custom at which a druggist aims by noticing the odor which pervades his shop. No odor at all is the best of odors in the creed of the highest school of physical good breeding, but if they must exist, let them be healthful and agreeable. Even with the addition of a slight cost to the daily expenses of the establishment, druggists will do well to use agreeable odors to neutralize or dislodge unpleasant ones. A drug-store ought not to smell like a hospital, a sick-room, or a cemetery. Customers are not patients, and a healthy human being has, as a general thing, a hearty dislike of whatever suggests ill-

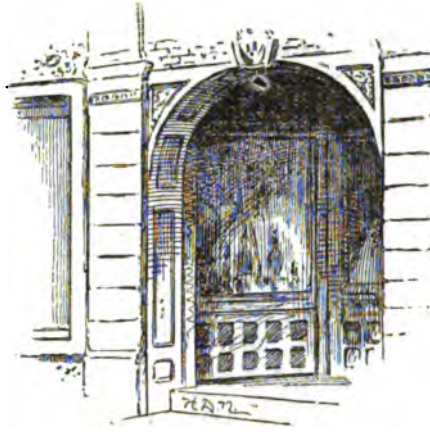


ness or death. Decorative plants and flowers should play, whenever it is possible, an important part in the interior economy of the drug-store, and among them it is well to choose a few for qualities of healthful, spicy fragrance.

In the large illustration in which a lady and child are shown in the foreground on a long seat we have good examples both of judicious architectural arrangement and interior decoration. In this shop there are two rooms with presumably two entrances, one being somewhat below the other and connected with it by the two steps in the middle of the foreground. The arches answer their architectural purpose admirably, being solid, unpretentious, good in line and curve, and well repeating the forms of the shelves, the counter and the prescription desk seen beyond them, as well as those of the seat and rug in the foreground. The curtains are well arranged, so that the triple sweep of the arches can be shown in all its symmetry at a moment's notice. The large plant in a handsome jar at the right of the illustration gracefully completes this effective bit of interior decoration. It is noticeable that horizontal and vertical lines with different angles form the body of this design, corresponding with the long slight curve of the arches.

It is never well to encumber a drug store with obtrusive, bulky objects, whether in decorative or mercantile intent, but an unpleasant bareness of effect should also be avoided. There is a drug-store in New York on one of the fashionable thoroughfares which may serve as a good application of this principle. It is unusually deep and wide. The counters and glass cases run the length of the store, where they join a carved wooden partition screening the druggist's laboratory. The effect of the store is that of a painful nudity, and the person entering at once receives a disagreeable impression. This might be easily counteracted by the judicious introduction of a few decorative objects, say flowering shrubs or stately plants in jars of goodly fashion. Better, indeed, would be aquatic plants or some small aquaria in which plants of different kinds should gracefully reveal and partly conceal the gambols of small fish and other living creatures, and shining pebbles and shells should glimmer in the sunlight that streams in through the wide, high windows. The employment of aquatic plants in the decorative capacity would, in this case, be entirely in harmony with the general tone of the place, for we have, in this drug-store, an admirable decorative scheme which, if it were consistently carried out, would leave nothing to be desired. The ceiling of this store is roughly plastered in relief, and painted in light greens to represent the sea. Scallop-shells, apparently real and of different sizes, are thickly strewn on the corrugated surface. Along the walls, just under the ceiling, runs a frieze of similar design, simulating waves or undulating water, and also treated in greens. A thick, gilded cable rope, lightly curved and somewhat slack, separates the frieze from the rest of the wall, which is not in tone with the ceiling and frieze, and is of an offensive light color. It ought to be treated in one or more of the marine greens to be decoratively consistent. The chandeliers hanging from the ceiling are harmonious enough, being of a rather dull, delicate silver. The plaster or wooden ornaments, however, from which these gas-fixtures depend, are painted a dingy cream yellow, and, by their lack of

harmony with the rest of the ceiling, do much to injure its effect. The large window of the shop is decorated with masses of sponges and large branches of coral, thus carrying out the marine idea. The wall-shelves and cases are florid in their mouldings and not inappropriate, but they have been painted a glaring dead white, and their want of tone impresses the customer unpleasantly. The soda-water apparatus, on the other hand, with its gilded and silvered tracings and accessories, and its marbles of fine marine greens, does much to help out the decorative scheme, which is an excellent one as far as it goes.



Another striking example of drug-store decoration exists on the ground-floor of a New York building, in that part of the city where traces of the present enthusiasm for architectural ornament are most prominent. This



drug-store is remarkable for the beauty of its marbles, which are almost as lavishly employed as they are in the churches of Italy. They are in several colors, solid, intrinsically valuable, and arranged with an eye to pictorial effect. The soda-water apparatus is of the most decorative kind, and also made of handsome colored marbles, besides being richly finished in silver-plate. The ceiling is treated in colored relief, delicate in form and design, and somewhat florid in style. These reliefs are all painted by hand, and about the centre moulding, from which the gas-fixtures hang, is painted a wreath of brilliant flowers, which for execution would be a credit to any exhibition of pictures. Light oak is also extensively used in the fittings. This store offers an extreme example of rich and costly decoration. Few druggists would care to put so much

money into marbles as is represented in this jewel-box of an establishment.

In the older drug-stores, the floors are generally of white marbles. In those recently built and decorated according to contemporary art ideas, colored tiles seem to be preferred. They have the advantage of not growing dingy, as white marble is apt to, even when frequently washed. In choosing the seats which should be found in every drug-store, it is well to consider intrinsic beauty as well as relative suitability. They should be solid in construction, because they are subjected at times to rough usage. They should be, if possible, artistic, but not pseudo-artistic, flimsy, or tawdry. In color and general style they should either harmonize or contrast effectively with the other accessories of the store. Wrought metal seats, with cushions of good color and style, are as durable and effective as any. Oak chairs and benches are now much used everywhere. They are especially adapted to public places, and would be in excellent taste in a drug-store, especially where this wood was used in the architectural scheme. The fine amber color of the oak, now so much in demand for the interior accessories of houses, lends itself readily to decorative exigencies.

There is no doubt that the average American gas-fixture is chiefly remarkable for hideousness. It is, perhaps, for this reason that the tide of decorative fashion has turned in the direction of lamps and wax candles. Their accessories are more inherently artistic because more easily handled, more obedient the will of the designer, who is not hampered by the necessity of subordinating the outward forms of his work to the requirements of the unwieldy tubes through which the gas must pass. Even in drug-stores which are decorated according to modern artistic principles, the gas-fixture is generally found to be a pretentious monument of bronze or gilt metal, all sharp angles and corners, heavy and uncouth in general style. In places where gas can be dispensed with or where it does not exist at all, lamps, and particularly hanging lamps, would be much more desirable. Lamps are fashioned now in endless artistic and beautiful shapes, and the druggist can easily make a choice from among the many varieties sold which shall be suitable to his purpose and to the other decorations of his store. A graceful hanging-lamp used in the corridors of an elaborately decorated apartment-house at New York, has delicate fittings of brass, giving a scintillating effect, and is itself formed of milky glass with a bluish tinge, shaped like a lily or convolvulus bud and issuing in the most charming manner from among the glittering bits of metal. Hanging lamps are always safer than the other kind, as well as far more effective, and they give all the light that is necessary. They are especially adapted to the night-watches that fall to the lot of every druggist. The fashionable idea of casting rosy lights upon surrounding objects by means of glass or silk shades might be applied by the druggist with good effect so long as the result was not obtrusive, finical or unsuitable to the conditions of the store.

Minor decorative objects may be left to the taste and discretion of the individual druggist. Mirrors are employed by some and not by others. It is a sound principle, however, based on knowledge of human nature, that the presence of a mirror, especially a full-

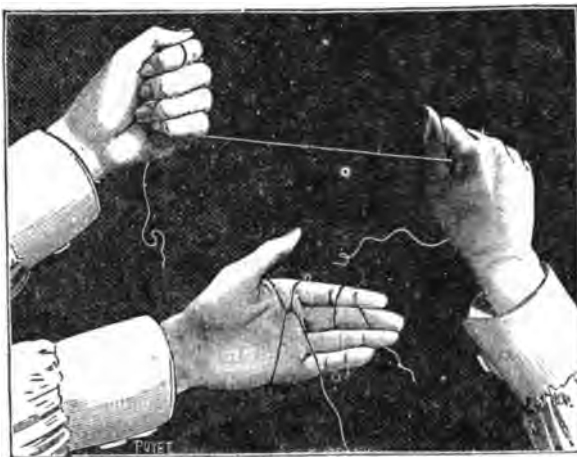
length one, will always attract a woman and frequently a man. Comparatively few people possess full-length mirrors, and yet every one at all afflicted with personal vanity yearns to survey himself or herself from head to foot. Personal observation will soon assure the druggist that the presence of a full-length mirror by the side of the soda-water apparatus will insure him considerable custom. There exists a closer relation than many persons suppose between human vanity and soda-water. The average American young man and the average American young woman are drawn together by vanity and what might be called mutualistic self-love. The experience of the average druggist teaches him that consumers of soda-water at all seasons are apt to hunt in couples and, in scriptural parlance, they are created male and female. The connection is obvious. In order to attract the woman, and consequently the man, the soda-water counter and apparatus must be clean, decorative, and generally enticing. No wet marbles, ancient sponges, dingy glasses, or marauding flies should be allowed anywhere near it. Seats, clean, comfortable, and well-kept, are especially desirable here. Feminine finery must be carefully treated by druggists who would be popular.

The soda water apparatus is in many drug-stores the most prominent object. This is well enough, provided it be not allowed to obtrude itself unpleasantly, and provided, too, that in general style it be entirely in harmony with the rest of the interior arrangements of the store. A handsome soda water apparatus made of solid rich marbles of different tones and colors, and with accessories and designs of gilt or silver plate, is the most decorative object possible. Properly selected and placed, this apparatus really becomes the decorative key-note of the store. Most druggists dispense soda-water very near the main entrance of the establishment, probably with the idea that the sight of the apparatus from without starts a train of thought in the direction of refreshment in the mind of the person glancing through the door or window. A better idea is to give it an advantageous position somewhere in the interior of the store, so that it may be seen from without, and at the same time may force the thirsty couple to pass counters and cases full of attractive goods. While they are meditatively absorbing carbonated strawberry or sarsaparilla, their eyes can thus roam freely over the brilliant display of wares about them, and the chances are that they will not leave without making a purchase. This will be due to the softening influence of soda water, judiciously situated—the right thing in the right place.

The soda water apparatuses of the present day are decidedly monumental. They are works of architecture as well as of art. In professional and technical parlance, they bear the imposing title of Carbonated Beverage Apparatus, and for general magnificence and petrifying dignity of demeanor, they certainly act up to their appellation. A soda and mineral water apparatus that stands eight or nine feet high and costs five thousand dollars should command respect from the most flippant young couple that ever turned to it for the cheering glass that is warranted not to inebriate. The superb marbles of which these fountains are constructed would alone give them great decorative value. The quarries of Europe, America and Africa contribute these beautiful blocks of stone. The position chosen by the druggist for his soda water ap-

paratus should determine his selection of shape and general style. If it be against a wall, he requires a wall apparatus. He can have any size or form he chooses, within certain limits. Severe, sober, fantastic, florid or classical, in good architectural style or in bad—sarcophagus-like, pyramidal, with towers and turrets, with many ornaments, with riotous abundance of curves and scrolls, pagodas, Japanese renaissance, Roman, rococo, all possible schools of form and suggestions of schools, jumbled together to produce an American soda water carnival! There is a barbaric gorgeousness about the American soda water apparatus. It might be presented to the nations as epitomizing our national architecture. The Goddess of Liberty might properly be represented with a magnificent fountain of the national beverage at her feet, rivalling in architectural symmetry the public buildings of the country.

Where circumstances permit of the luxury, a small fountain, such as one sees in many pastry cooks' establishments and restaurants, placed in the centre of the store, forms a very pleasing and comparatively inexpensive decoration. If a stove be used for heating, it should be decorative in character, in good taste and not placed where people will stumble



How to break strings.

against it at every turn. The wall arrangements and shelves containing rows of jars afford good opportunities for the exercise of the decorative faculty. Druggists' jars are generally sufficiently decorative in themselves when good models have been followed by the potter. Handsome, solid woods, in their natural colors, are the best materials for mouldings, carvings, shelves, sliding doors and similar finishings of the store.

It frequently happens that in disposing the interior of a store to the best architectural advantage, it is not possible to provide for projecting windows, owing to limitations of space. Windows and doors may be placed in an alcove entrance, and, being made of glass, give the customer a good view of the interior, in which the objects are arranged to present as full a view as possible to those entering. These windows can be tastefully decorated within. A bust of some classical medical or pharmaceutical celebrity, mounted on a pedestal of good architectural style, makes a fine decoration for such a window and may be used to fill up any awkward space unprovided for in the scheme of interior arrangement.

HOW TO BREAK STRINGS.

La Nature describes the following ingenious mode of breaking strings which will often prove serviceable when a cutting tool is not at hand.

Pass the cord around the left hand, so that it crosses itself at the point where it is desired to separate it, wind

one end about the fingers of the left hand, as shown in the illustration, and then, holding the other end firmly at a distance from the left hand of about a foot (or more in proportion to the size of the cord), bring the hands together and then separate them with a sudden jerk, the left hand being at the same time held closed, as shown in the upper figure. A strong cord can be broken in this manner with very slight effort and without hurting the hands.

[ORIGINAL COMMUNICATION.]

NOTE ON COCAINE.

BY HENRY MACLAGAN.

WHILE engaged in the manufacture of the alkaloid cocaine, I have recently made a somewhat singular discovery which may possibly lead to some good results. I have found that the alkaloid is, under certain conditions, changed into benzoic acid and some other substance or substances, not yet determined, but among which, I think, is propylamine. If a little of the alkaloid cocaine is dissolved in alcohol, and strong solution of soda or potassa added, the odor of benzoic acid is quickly perceptible. This odor, however, disappears somewhat after a short time, owing, I suppose, to the formation of a benzoate of the alkali. If now a little water is added and the alcohol driven off by a gentle heat, the addition of an acid in excess causes a light, pearly precipitate (provided not too much water had been added), having the odor and chemical characteristics of benzoic acid. The mother liquor no longer gives evidence of the presence of an alkaloid when tested with potassium iodohydrargyrate.

Perhaps this may explain the failure of many attempts to extract the alkaloid by means of ether, in presence of soda or potassa, since the ether nearly always contains more or less alcohol. Ammonia seems to have no action, and therefore should always be used in preference to the fixed alkalies.

It is stated by Lossen and Wöhler (see *Proc. Am. Pharm. Assoc.*, 1878, 765; *Am. Journ. Pharm.*, 1884, 34) that cocaine, when heated with hydrochloric acid, splits up into benzoic acid and certain other substances. In a few preliminary trials made with a view to verify this statement, I could obtain no benzoic acid, which appears to show that there are certain conditions, at least, under which the decomposition does not take place.

NEW YORK, January 10th, 1885.

Artificial Sea-water for Aquaria.

To 50 liters (about 13½ gallons) of pure hard well water, take 1,325 grammes (46½ ounces) of common salt, 100 grammes (about 3½ ounces) of sulphate of magnesium, 150 grammes (about 5½ ounces) of chloride of magnesium, and 60 grammes (about 2 ounces) of sulphate of potassium, all of which can be obtained tolerably, though not entirely pure (foreign admixtures and impurities may easily cause the death of all the animals). Each of these chemicals is dissolved in water by itself; they may all be poured together, and allowed to stand quietly for several hours, so that little stones and other impurities may settle to the bottom. All particles of dirt floating on the surface should be carefully removed by dipping. The mixture is then poured into another vessel, and diluted with fresh water until the spec. grav. is about 1.027.

The quantities given above will produce about 50 liters (about 13½ gallons) of sea-water.

Preparation of the Oleates.*

For the preparation of the metallic oleates, tolerably pure oleates of potassium and sodium are necessary.

Conti's white Castile soap, though not entirely free from foreign fatty acids (besides oleic), is sufficiently pure to be used as oleate of sodium, but, in order to be able to calculate the proper amount required, it is best to use it in the dried and powdered condition.

1. Oleate of Sodium.

To one pound of the best powdered Castile soap add about one-half gallon of distilled water and stir until an even and transparent mixture results. Then add more water, heat until dissolved and dilute with water to 16 pints. Each pint equals 1 av. oz. of dry Castile soap or oleate of sodium.

2. Oleate of Potassium.

To 1 gallon of boiling water add gradually 5 av. oz. of bicarbonate of potassium. When the excess of carbonic acid gas has been expelled, add 14 av. oz. of purified oleic acid, and heat until saponification is complete. Cool and dilute to 16 pints. Each pint equals 1 av. oz. of potassium oleate.

3. Oleate of Aluminium.

Dissolve 240 grains of potash alum in 2 pints of distilled water, and slowly add 1 pint of solution of oleate of sodium (No. 1). Warm the mixture until the oleate separates. Then draw off the liquid and wash the oleate twice with 2 pints of lukewarm water. Then cool and separate the water from the soft, white oleate.

In the preparation of most oleates it is best to have the metallic salt slightly in excess of the sodium oleate. The exact amount of alum required by theory would be 227 grains. The weight of the product should be about 400 grains (417 grains theory).

4. Oleate of Arsenic.

Dissolve 48 grains of lump arsenious acid in 1 pint of boiling water with the aid of 48 grains of bicarbonate of potassium. To the cooled solution add 220 grains of hydrochloric acid (sp. gr. 1.16), or an equivalent amount of weaker acid. This produces arsenious chloride in solution without the danger of poisoning if hydrochloric and arsenious acids are boiled together. Dilute this solution with 2 pints of distilled water and slowly add to it one pint of solution of sodium oleate (No. 1). Then warm the mixture until the oleate separates, draw off the aqueous liquid and wash twice with boiling distilled water.

The oleate of arsenic thus produced has a yellowish color and about the consistence of butter. Product, about 1 oz. av.

5. Oleate of Bismuth.

Dissolve 280 grains of crystallized nitrate of bismuth [not the subnitrate] in 4 av. oz. of cold glycerin. The best way is to powder the crystals in a clean mortar and then add all the glycerin at once, and stir occasionally, avoiding pressure. The nitrate will usually all dissolve in a few hours. If less glycerin is used, the operator incurs the danger of a rather violent explosion, which may suggest to him the possible formation of nitro-glycerin. If the above-mentioned precautions are observed, however, there is no danger. Now dilute one pint of the sodium oleate solution (III.) with 2 pints of distilled water, and slowly add to it the glycerin solution of the bismuth nitrate. Warm the mixture, reject the aqueous layer, and wash

twice with warm distilled water, as directed for the oleate of arsenic.

This oleate is of a white or yellowish-white color, and has about the consistence of an ointment. The product is about 500 grains (503 grains theory).

6. Oleate of Copper.

[This and some of the following oleates are given in an abbreviated form, as the manipulation is similar to that directed for preceding oleates.]

Sulphate of copper 180 grains.

Dissolve in water to 2 pints.

Solution of oleate sodium 1 pt.

Product: a handsome, dark green, waxy solid; yield, about 1 av. oz.

7. Oleate of Iron.

Solution of tersulphate

iron (U. S.)..... 350 grains.

Dilute with warm water, 2 pints.

Solution of oleate sodium, 1 pt.

Product: dark-red, soft solid; about 400 grains.

8. Oleate of Lead.

Acetate of lead.... 280 grains.

Dissolve in water to 2 pints (and render solution clear, if necessary, by dilute acetic acid in drops).

Solution of oleate of sodium, 1 pt.

The washed and still warm oleate may be pulled in the same manner as candy, whereby it acquires a finer appearance. Product is whiter than ordinary lead plaster, hard and brittle when cold. As it blackens when exposed to sulphuretted gas, it should be broken in pieces and kept in well-corked bottles.

9. Oleate of Mercury, precipitated 28 per cent.

Balance a small evaporating dish, and into it weigh first 150 grains of yellow oxide of mercury, then 130 grains of U. S. P. nitric acid (sp. gr. 1.42) or an equivalent, larger, amount of weaker nitric acid. Add 2 fl. ounces of distilled water, and apply heat until solution is effected. It may be necessary to add a very few drops more of the acid, but excess should be avoided. Dilute this solution of mercuric nitrate with 2 pints of distilled water, and add one pint of solution of potassium oleate (IV.). Then warm the mixture, and wash the separated mercuric oleate twice with warm distilled water.

Some writers direct to precipitate a solution of corrosive sublimate with a sodium oleate solution, and this would seem a simpler method than the one here recommended. But in practice it is not as satisfactory, it being very difficult to wash out completely the sodium chloride from the mercuric oleate. Nitrate of potassium is easily removed by water washing. In the process here given it is not advisable to substitute the red oxide of mercury for the yellow, because some poorly-made samples contain a notable amount of nitric acid, which, of course, reduces the percentage of real oxide present.

Some samples of yellow oxide contain a very small proportion of oxide of iron, and it is not infrequently the case that this slight impurity causes the precipitated mercuric oleate to have a slightly reddish color, which serves to distinguish it from the 20 per cent oleate of mercury next to be described. The amount of iron present is so very small that it cannot be considered objectionable.

Precipitated oleate of mercury thus prepared, is a yellow or reddish-yellow, soft solid. It differs from 20 per cent oleate of mercury in being of a slightly stiffer consistence, and in containing about 8 per cent more mercuric oxide (28.4 per cent). The product of this formula is about 500 grains (529 grains, theory).

10. Mercuric Oleate, 20 per cent oxide.

Take of precip. oleate of

mercury..... 400 grains.

Purif. oleic acid..... 168 "

Mix them, warm gently, stir well, and cool.

This oleate may also be prepared by warming gently together (not above 165° F = 74° C.) 100 grains of yellow oxide of mercury and 400 grains of purified oleic acid. As this 20 per cent oleate keeps well, and is a more convenient strength for the preparation of the 10 and 5 per cent dilutions, it is recommended that it be kept in stock for these purposes.

11. Mercuric Oleate, 10 per cent oxide.

Take of oleate of mercury

20 per cent..... 250 grains.

Purif. oleic acid..... 250 "

Mix them.

This diluted oleate gradually decomposes with separation of gray metallic mercury; hence it should be prepared extemporaneously, as wanted. It may be made somewhat more permanent by using 125 grains of petroleum, vaseline, or cosmoline and 125 grains of oleic acid, in place of the 250 grains oleic acid of the above formula; but it should be remembered that petroleum products are slowly, if at all, absorbed by the unbroken skin, and that their addition to oleates must, in some degree, retard their action.

12. Mercuric Oleate, 5 per cent Oxide.

Take of oleate of mercury

20 per cent..... 125 grains.

Purif. oleic acid..... 375 "

Mix them.

This diluted oleate is even more prone to decompose than is the 10 per cent oleate. It should only be prepared as wanted. As it is quite weak, it is not advisable to use petrolatum in diluting unless ordered by the physician.

13. Oleate of Mercury and Morphine.

(Mercuric oxide 20 per cent, Morphine 5 per cent.)

Take of precip. oleate of

mercury (28 per cent

oxide)..... 400 grains.

Morphine (alkaloid).... 28 "

Purif. oleic acid..... 132 "

Mix, and combine by heating very gently.

A very dark-brown semi-liquid or soft solid, according to temperature.

14. Oleate of Mercury and Morphine.

(Mercuric oxide 5 per cent, Morphine 2 per cent.)

Take of oleate of mercury

(20 per cent oxide)..... 125 grains.

Morphine (alkaloid).... 10 "

Purif. oleic acid..... 365 "

Mix and combine by heating very gently.

More fluid, and somewhat lighter colored than 15.

15. Oleate of Silver.

Nitrate of silver.... 245 grains.

Dissolve in dist. water

to..... 2 pints.

Solution of oleate so-

dium..... 1 pint.

The product, which is nearly white, blackens by exposure to air; hence it should be prepared at night and kept in a dark place. Yield, ab. 500 grains.

16. Oleate of Zinc, Dry.

Acetate of zinc, cryst. ... 180 grains.

Dissolve in dist. water to. 2 pints.

Solution of oleate so-

dium..... 1 pint.

Dry the washed oleate on paper or muslin by exposure to dust-free air, without heat. Yield, about 400 grains.

Sulphate of zinc is objectionable as a

* Abstract of a Paper by Mr. H. B. PARSONS in the *Drugg. Circular*.

starting point, as the generated sulphate of sodium cannot be readily washed out from the product.

17. Oleates of Alkaloids.

Oleates of *aconitine*, *atropine* and *strychnine* are usually made of the strength of 2 per cent.

Oleate of *morphine*, 2, 5, and 10 per cent.

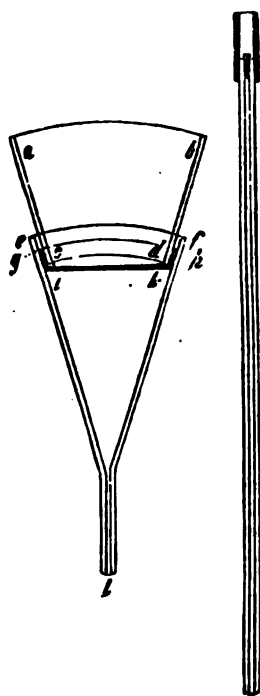
Oleate of *quinine*, 5, 10, and 25 per cent.

[Oleate of *cocaine*, 5 per cent.—Ed. A. D.]

Oleate of *veratrine*, 2 and 10 per cent.

Percentage of Metal in the Metallic Oleates.

100 parts of oleate of	corre- spond to	Oxide.	%
Aluminium	Al ₂ O ₃	5.86	
Arsenic	As ₂ O ₃	21.55	
Bismuth	Bi ₂ O ₃	22.22	
Copper	CuO	12.67	
Iron (ferric)	Fe ₂ O ₃	8.89	
Lead	PbO	28.95	
Mercury (precip.)	Hg	28.32	
Silver	Ag ₂ O	29.77	
Zinc	ZnO	12.90	



FILTERING APPARATUS FOR SYRUPY LIQUIDS.

In consequence of the requirement of the last German Pharmacopoeia, to filter the syrups, various methods and devices have been proposed by German pharmacists to facilitate and hasten this operation. The latest is one by C. A. Müller, which is an improvement on an apparatus proposed by him a year before.

It consists of a double funnel, of the angle of 30°, the upper portion of which (a, b, c, d) reaches (and is ground air-tight) some distance into the interior of the funnel itself. The neck of the funnel is lengthened by attaching to it, by means of rubber tubing, a long glass tube of the internal diameter of 0.5 centimeter (ab. $\frac{1}{4}$ inch), into the upper end of which is introduced a thin strip of vulcanized rubber or horn. (In Fig. 2 the positions of the rubber parts are indicated by heavy black lines.)

When the apparatus is to be used, a round filter, having a diameter by 1.5 to 2 Cm. ($\frac{1}{4}$ to $\frac{1}{2}$ inch) larger than the lower aperture of the upper part of the funnel, is soaked for half an hour in distilled water or in the syrup to be filtered. This is then placed over the opening (the funnel being turned upside down) in such a manner that it overlaps the edges uniformly. Over it

is placed a piece of gauze of the same size. The funnel itself is then uniformly fitted over it and strongly pressed in. It is then reversed and suspended or placed in a suitable frame. (The black line in Fig. 1 shows the position of the paper and gauze.) The extension or suction tube is then attached to the neck of the funnel, and the filtration may be started. The syrup which flows during the filtration through the lower funnel rarefies the air contained in the latter, and thereby increases the pressure of the air upon the liquid in the upper funnel. Hence, during the first 5 or 10 minutes, air-bubbles are carried off, along with the filtrate, through the suction tube. As soon, however, as the pressure inside and outside of the funnel has become nearly equalized, the rapidity of the flow somewhat diminishes.

The rate of filtration depends upon the surface of the filter and the length of the suction tube. The following figures will give an idea of the practical efficiency of the apparatus: With a filter of the diameter of 8.5 Cm., containing therefore 48 cubic centimeters, and with a suction tube of 50 Cm. (18.9 inches) in length, from 1 to 3 kilos of syrup were filtered per hour, according as the temperature of the latter was nearer 12° or 20° C. Thick, viscid syrups filter somewhat more slowly, but always at the rate of over 1 kilo per hour.

This process permits almost the very last portions of the syrup poured on the filter to be passed through. To prevent the suction tube from being easily broken, it is advisable to use barometer-tubing of the above stated bore. The object of the little tongue of rubber or horn placed in the top of the tube is to prevent the liquid from running down the inner walls of the tube without filling it with liquid.

The best paper for this process is the double-thick, rapidly-filtering paper made by Schleicher & Schüll in Düren. It is always best to soak it in the liquid for some time, in order to render the joint between the funnels air-tight. Though it should, theoretically, be soaked in the liquid to be filtered, it will be found generally more convenient to soak it in water.—Arch. d. Pharm., 222, 855.

Iridium.

IRIDIUM is a metal which is likely to have a much more extensive employment than it now enjoys. Hitherto it has been chiefly used in alloy with osmium for tipping gold pens. But an American pen manufacturer has discovered that, by fusing the metal at a white heat and adding phosphorus, perfect fusion could be obtained, with all the hardness in the resulting material of the iridium itself. For mechanical applications this combination is exceedingly useful, as in the case of pen points: and its adaptability is being proved in many ways. Agate, which has hitherto been employed for fine chemical balances, is now giving place to iridium, which takes a finer edge and is not so liable to catch or break. Hypodermic needles for surgical use are now made of gold and tipped with the iridium compound, which is not subject to corrosion like the old steel points, and it is also being largely applied to instruments for surveyors and engineers and to electrical apparatus. Iridium can be obtained somewhat abundantly from the Russian platinum mines in the Ural, and it is found in combination with gold in California. Mr. Dudley, of Cincinnati, is engaged on experiments with the object of plating vessels with iridium, and as the metal resists the action of acids, it is likely that such vessels will be very useful in many chemical operations.—Chem. and Drugg.

On the Proximate Principles contained in Ergot and the new Alkaloid Cornutine.*

ERGOT contains quite a number of proximate principles which differ much from each other in properties and effects. It was not the object of the author to isolate each one of these and study its effects, but rather to confine himself to those which produced toxic symptoms and exhibited special activity, and while he endeavored to prepare the different principles in as pure a state as possible, he does not claim that they were *chemically* pure; his main object being to have them *physiologically* pure, that is to say, of such purity that the characteristic toxic symptoms produced by one were not obscured or interfered with by symptoms belonging to another.

Dr. Kobert recognizes in ergot three physiologically active, organic principles, two of which are acid, and one of a basic character.

1. *Ergotinic acid* (*Ergotin-Säure*). This name is not new, it having been previously applied by Merck (by suggestion received from Strassburg) to a preparation obtained by a process devised by Zweifel. This name should be retained, to distinguish the body from sclerotic acid, with which it is not identical. In fact, ergotinic acid is the chief constituent of sclerotic acid as formerly prepared, and even that prepared by the improved process of Podwyssotzki, still contains some of the new substance.

Preparation. This depends on the fact that ergotinic acid is precipitable by ammoniacal subacetate of lead.

Coarsely powdered ergot is percolated with ether containing a little sulphuric acid, until the ether has extracted all the fat. The powder is then extracted with acidulated alcohol, until the percolate runs off almost clear. After being dried in the air, the powder is then digested several times with much water at 80° C. for twelve hours, the united liquids are mixed with subacetate of lead until no more precipitate is produced, and the filtrate is finally precipitated by ammonia and subacetate of lead. This ammoniacal lead-precipitate is purified first by frequent decantation, afterwards by washing on the filter, and pressed between filtering paper, when it should retain at most only traces of ammonia. It is now decomposed by hydrosulphuric acid, the colorless and clear filtrate concentrated in vacuo, and then precipitated with absolute alcohol. The yellowish-white precipitate is washed with pure absolute alcohol, dried over sulphuric acid, and preserved.

Ergotinic acid is very hygroscopic and has an acid reaction. It contains nitrogen, and it is very difficult to free it from the last traces of magnesia and lime.

Ergotinic acid constitutes a comparatively large portion of Bonjean's so-called *ergotin*. Wernich's ergotin, a supposed improvement of the former, was found by Dragendorff and Podwyssotzki to contain sclerotic acid, but the preparation of the last German Pharmacopoeia, owing to the peculiar process employed, contains almost no other active substance besides ergotinic acid. Most other German ergotins contain varying proportions of different substances, among which sclerotic acid predominates. None of them can lay any claim to reliability.

Of the physiological effects only the most important features can be mentioned here, both in the case of this and also in that of the below described substances. It will suffice to say that

*Abstract from a pamphlet by Dr. R. Kobert, assistant at the Laboratory for experimental Pharmacology at Strassburg, entitled: *Ueber die Bestandtheile und Wirkungen des Mutterkorns*, 8vo, Leipzig, 1884, pp. 66.

ergotinic acid is absolutely without any contractile effect upon the uterus of animals.

2. Sphacelinic Acid* [*Sphacelic Acid, Sphacelin-Säure*].

Preparation.—This depends upon the insolubility of the free acid in water, and its solubility in alcohol.

Fresh, finely powdered ergot (containing its oil) is percolated with a large quantity of cold, three-per-cent hydrochloric acid, after having been macerated with it for twelve hours. The residue is then extracted with several portions of water, the retained water pressed out of it as much as possible, and the residue dried by exposure to air. Having again been reduced to powder, it is packed in the percolator and extracted with ether, until the fatty matter after evaporation of the ether begins to become firm. At this moment, about twenty-two to twenty-five per cent of fat, but no sphacelinic acid has been extracted. As soon as no more liquid drops from the percolator, alcohol is poured on top and the percolate collected until it consists almost of pure alcohol. This percolate, which has a distinctly red color, is filtered and the coloring matter precipitated by a hot saturated solution of baryta. The slightly alkaline filtrate is freed from barium by sulphuric acid, and the slight excess of sulphuric acid removed by oxide of lead rubbed to a paste with water. The bright yellow filtrate is evaporated at 40° to 50° C., when a brown resin mixed with fat is precipitated. This smeary mass is intimately triturated with a concentrated solution of soda, whereby a soap-like, tough, light-brown compound is formed, which is deprived of fat by ether, thereby losing its tough, soapy consistence, and leaving behind a whitish powder. The latter is dissolved with an excess of sodium carbonate at a gentle heat, the solution filtered, and the sphacelinic acid precipitated by the addition of hydrochloric acid.

Sphacelinic acid is insoluble in water and dilute acids, difficultly soluble in fatty oils, chloroform and ether, but soluble in alcohol. It is very prone to decompose, either by keeping ergot too long or manipulating it improperly, and should always be prepared from fresh ergot. It contains no nitrogen.

The specific physiological action of sphacelinic acid appears to be this, that it increases the blood-pressure, and produces copious extravasation of blood in various portions of the body, which often lead to gangrene or gangrenous processes. Among other peculiar effects which it is capable of producing, is a peculiar disease of the crystalline lens, which leads to cataract. Cataract from the use of ergot has been reported already during the last century, and it is only now that the principle which most probably causes this disease has been discovered.

3. Cornutine [*Cornutin, Germ.*].

This is not identical either with the crystalline or with the amorphous ergotinine of Tanret. Although but little is so far known of its chemistry, the author nevertheless deemed it advisable to assign to it, provisionally, a definite name, viz., cornutine.

Preparation. This depends upon the fact that the alkaloid is easily soluble in alcohol, and that it may readily be shaken out from its alkaline, aqueous solutions, by acetic ether.

Large quantities of powdered ergot, still containing its oil, are percolated with hydrochloric acid of three per cent. The percolate is rendered almost neutral with carbonate of sodium, evaporated and the residue extracted with alcohol. The latter is distilled off, the residue rendered alkaline with carbonate of sodium and extracted with acetic ether. From this it is withdrawn (together with some inert alkaloids) by agitation with water containing citric acid.

This method is capable of preparing enough alkaloid from only two Gms. of ergot to suffice for physiological experiments upon frogs; indeed, the method is even sufficient to test ergot for the presence of this important alkaloid.

As the alkaloid exists in ergot only in very minute quantities, it is necessary to operate on very large amounts of ergot in order to obtain enough material for chemical experimentation. For the present, the author had to leave the question of its chemical composition on one side. Only this is certain that the alkaloid is precipitated in alkaline solution by corrosive sublimate, that it partially decomposes in alkaline solution when concentrated, and that the hydrochlorate and citrate are easily soluble in water.

According to Dr. Kobert, Wenzell's echolin is an impure substance (containing more or less cornutine).

What relation cornutine bears to Tanret's ergotinine cannot be decided at present. On ergotinine the author makes the following interesting statement:

"Regarding the two alkaloids discovered by Tanret (particularly the crystalline one), it is extremely difficult to obtain a clear idea from personal study, since ergotinine is scarcely ever obtainable in the market, and can be prepared only at heavy expense and with great trouble. I could not have done justice to this chapter of my theme, if I had not been most liberally supported by Gehe & Co., of Dresden, to whom I herewith publicly tender my thanks. With the aid of the experience made in their establishment, I can make the following statement on Tanret's two alkaloids. The ethereal extracts of ergot are shaken with aqueous solution of citric acid, the watery liquid treated with potash, then shaken with ether, and the ethereal solution dried in vacuo. The residue contains the crystalline and the amorphous ergotinine. To obtain the former, the mixture is dissolved in boiling alcohol. On cooling, the crystallizable ergotinine separates in needles of a silky lustre. With acids it forms salts, which are, however, nearly as difficultly soluble as the alkaloid itself. The most insoluble is the hydrochlorate; more soluble are the sulphate, acetate, oxalate, citrate, and tartrate; less soluble the borate, benzoate, and salicylate. The yield of both alkaloids is only $\frac{1}{10}$ of one per cent of the original ergot employed. The citrate of the crystalline ergotinine dissolves in about 400 parts of water.

Cornutine differs physiologically from ergotinine, though the latter, even when pure, cannot be expected (according to the author's researches) to affect the uterus. If it has done so in the hands of practitioners, this is due, (according to the author) to the presence of cornutine, which acts like pilocarpine in minute doses, and under these circumstances also produces movements of the uterus. Cornutine produces in certain animals a peculiar stiffness or rigidity of the muscles in larger doses, clonic and tonic convulsions, and movements of the viscera and uterus, which are, however, absolutely different from the peculiar tetanus of the uterus produced by ergot itself, and never lead to the expulsion of the foetus. Cornutine, is, there-

fore, not the specific principle acting on the uterus, though it may be inferred that its presence, in an ergot preparation, makes it more active.

The author takes occasion to remark that the *Extractum Secalis Cornuti* of the last German pharmacopoeia is, of all preparations, the most unlikely to act upon the uterus, when administered internally, since it only contains ergotinic acid. The extract of the first German pharmacopoeia was considerably better. During the months of September to December (that is, during about four months after the fresh crop is in), it is always preferable to employ fresh ergot in substance. That this is the most active period of the drug is shown also by the fact that epidemics of ergotism generally occur only within about four months after harvest, owing to the gradual disappearance of the sphacelic acid after that time. But it is equally certain that the percentage of cornutine diminishes likewise after this time.

The author disapproves the subcutaneous injection of preparations or substances extracted from ergot, until the pure active principles may be available. He also advises to abstain from the external use of ergot preparations in the dressing of wounds, until our knowledge of the drug has been further extended.

Syrup of Tolu.

THE new Codex orders Syrup of Tolu to be prepared by digesting 50 Gm. of Balsam of Tolu with two separate portions of 500 Gm. of water, uniting and cooling the liquors and filtering; then adding 180 parts of sugar to each 100 parts of filtrate, dissolving on a water-bath and filtering.

This process, which differs from that of the U. S. Ph. in this, that the latter orders the digestion of the balsam in the syrup itself, has been much criticised as not yielding a satisfactory product. An improved process has lately been proposed by Mr. Fournier of Lyons, which is as follows:

15 parts of balsam of Tolu are dissolved in 30 parts of alcohol of 85% in a suitable vessel at as low a temperature as possible; to the solution are added 100 parts of distilled or boiled and filtered water, and the whole distilled until 30 parts of highly aromatic alcoholic distillate are obtained. The still hot residue left in the vessel (flask, etc.) is then removed; this consists of an inodorous and insipid soft resin and a supernatant, opaque and highly aromatic liquid, which, on cooling, separates some cinnamic acid (colored by resinous matter) amounting to about 1.3 per cent of the original weight of the balsam.

The liquid from which the acid had separated is first reduced by evaporation, if necessary, to 70 parts, then the cinnamic acid is dissolved in it by the aid of bicarbonate of sodium (about 110 parts of the latter for every 200 parts of the acid), and the alcoholic distillate added, which renders the liquid perfectly clear and transparent. This liquid has a faintly yellow color and possesses a most agreeable taste and odor (particularly if 14 parts of Tolu and 1 part of benzoin have been used instead of 15 parts of Tolu), and contains all the cinnamic acid in form of a soluble salt, as well as one of the resins held in solution by the excess of the alkaline salt. If the distillation is carried on at a high temperature, the aroma of the product is accompanied by a disagreeable odor of toluene, but this is easily avoided.

To make the syrup, the author used the following proportions:

Syrup 950 parts.

Alcoholate of Tolu. . . 50 "

The product far surpasses the insipid preparation of the Codex.

* The German term *Ergotinsäure* has been rendered by us with "Ergotinic acid." We might have selected the shorter term "ergotic acid," but this might have caused a confusion with the "ergotic acid" of Wenzell with which the substance is not identical. In analogy to "ergotinic acid," we have rendered the German *Sphacelinäure* by "sphacelinic" (not "sphacelic") acid.

The name is derived from *Sphacelia segetum*, the old name of ergot, and appears quite appropriate, since sphacelinic acid chiefly produces gangrene or the gangrenous form of ergotism.

As the balsamic properties of balsam of Tolu are largely due to the cinnamic acid, the presence of the latter can easily be recognized by converting it into benzaldehyde by oxidizing agents.—*L'Union Pharm.*, 1884, Dec.

A similar plan, though less elaborate, is one proposed by Van der Velde (in the *Jour. de Ph. d'Anvers*, which directs to prepare a Glycerite of Tolu as follows: Dilute 37 parts of solution of potash with 150 parts of water, add the mixture to 15½ parts of balsam of Tolu contained in a capsule, and warm gently while stirring. Then add 222 parts of glycerin, concentrate the mixture to 300 Gm. and filter. One part of this glycerite with 15 parts of syrup is said to furnish a superior product.

Preparation of Iodoform Gauze.

REBER of Geneva gave the following directions (*L'Un. Pharm.*, 1883:)

Rosin, powdered.... 50 parts.
Alcohol, 94%.....600 "
Glycerin..... 50 "

After having treated the gauze with the solution, sprinkle upon it the iodoform (about 40 parts for a quantity of gauze impregnated with the whole of the above mixture) uniformly.

Gaudet recommends the following rapid plan: Dissolve, in 800 or 900 parts of ether, as much iodoform as it will take up, aiding solution by trituration, and even having a little iodoform in excess. Then pour the liquid into a wide-mouthed vessel, put in the gauze previously washed and dried, and when it is saturated, remove and dry it by a brief exposure to air. Keep it in a well-closed vessel protected from the light.—*L'Un. Pharm.*

AIR-TIGHT FUNNEL.

In the *Zeitschrift f. anal. Chemie* (1884, 517), F. Allihn describes an arrangement shown in the cut, which he has devised for filtering volatile liquids without incurring loss by evaporation. The cover of the funnel is ground, to fit into the latter air-tight. In all other respects, the apparatus is intelligible without further explanation.

We do not consider this arrangement of sufficient advantage to warrant the expenditure for the special apparatus required. A simple glass funnel, with a ground top, covered by a ground glass plate, is all that is needed. In order to establish communication between the air in the funnel and that in the receiver, a piece of glass tubing the lower end of which is ripped open on one side for a short distance (the open side being laid against the side of the funnel) is placed between the funnel and filtering paper. This answers the same purpose.

A NEW METHOD OF TESTING FOR IODINE, BROMINE, AND CHLORINE.

If nitrates, chlorates, bromates, or iodates are present, it is necessary to fuse the substance with a little sodium carbonate and charcoal to reduce them. If the haloids are united with silver, it is best to fuse with sodium carbonate and extract with water, although with iodine and bromine this is not absolutely necessary.

The substance is placed in a flask shown in the figure, with some water, and a few drops of solution of ferric sulphate. In the bulbs are poured a few drops of dilute starch paste. The bulbs are kept cold by immersing in water in a beaker. The contents of the flask are then boiled, and if iodine is present, the starch is colored blue. This test is extremely delicate.

If iodine is found, the cork with the bulb tube is removed and the solution boiled until on testing again in the

same way no more iodine is found. If much iodine is present, it is necessary to add more ferric sulphate solution. The bulb tube is now cleaned, charged with a few drops of water and a drop or two of chloroform, and a very small crystal of potassium permanganate added to the solution in the flask. The contents of the flask are boiled again, and if bromine is present, the chloroform becomes red. The tube is now removed and more potassium permanganate and ferric sulphate added, little by little, boiling between each addition until the bromine has all been driven off. A few drops of alcohol are added to the contents of the flask to decolorize any excess of permanganate, and after filtration chlorine is tested for in the filtrate with silver nitrate.

Mixtures were given to three qualitative students, neither of whom had used the test, and the results given by the author in an appended table prove the method to be serviceable and reliable.

It should be observed, however, that the presence of a large amount of bromine decreases the delicacy of the test for iodine.

The solution of ferric sulphate is made as follows:

Copperas is dissolved in water, oxidized with nitric acid, the solution precipitated with ammonia, and the precipitate washed by decantation and finally brought on a filter. 50 Cc. of dilute sulphuric acid (1 acid to 1 water) is then saturated with the still moist precipitate and to the solution 50 Cc. of the same sulphuric acid is added.—EDWARD HART, in *Chem. News*, Dec. 5th.



Spirit of Camphor.

ACCORDING to the *Rundschau*, the odor of spirit of camphor is rendered stronger and more agreeable if instead of plain water, elder-flower water is used for diluting the alcoholic solution of the camphor.

Note.—Elder-flower water does not keep well, and, therefore, needs to be freshly prepared and must be used within a few days afterwards. A good plan is to prepare a strong water, by distilling 12 parts of dried elder flowers with 2 parts of alcohol and about 100 parts of water, and collecting the first 10 parts, which must be kept in small, completely filled vials. For use, 1 part of this stronger water is diluted with 9 parts of distilled water.

Hydrobromate of Hyoscine is getting to be more in use, particularly since it has been more generally known that the so-called amorphous hyoscyamine of the market is mainly composed of the alkaloid hyoscyine. In ophthalmological practice, it should not be used in a stronger solution than 1 in 200, since toxic symptoms may follow the use of a stronger solution. Internally, it is given in asthma, etc., in doses of ¼ to ½ milligramme (⅛ to ⅜ grain), twice a day hypodermically, or, by the mouth, in doses not exceeding 1.5 milligrammes (⅓ grain).—E. MERCK.

NOTES ON PRACTICAL PHARMACY.*

(Continued from page 18.)

MIXTURES WITH NARCOTIC ALKALOIDS OR SUBSTANCES OF SIMILAR ACTIVITY.

NARCOTICS or very active *alkaloids* are also sometimes prescribed in mixtures. In these cases, the prescription clerk must carefully consider the solubility of the alkaloid in the menstruum, as well as any possible additions which might decompose the soluble alkaloidal salt, and set free the usually far less soluble alkaloid. Examples are: mixtures of *nitrate of strychnine*, water, and *aqueous tincture of rhubarb*, or alkaloidal salts, water, and tannin bodies, or with *extract of liquorice*. The alkaloid set free in one or another way forms a sediment which, unless always actively shaken before being taken, may finally be administered in its whole quantity to the patient, and act fatally. Instances of this nature in practice are not lacking. If the narcotic alkaloid does not completely dissolve, the prescription clerk must inform the prescriber.

CLEAR MIXTURES. FILTRATION. SALINE SOLUTIONS OF DEFINITE STRENGTH.

A mixture should and must be perfectly clear only if this may be expected from its constituents in physical and chemical respects. The soluble salts and other bodies forming clear solutions in their pure condition, are rarely free from particles of dust, and

furnish solutions which are either not quite clear, or in which small visible particles of dust are floating. Owing to their minuteness, these objectionable particles often cannot be removed by straining, and hence filtration must be resorted to. The simplest and most convenient filtering apparatus is a small glass funnel into the neck of which a loose pledget of glass

wool has been inserted, or a glass funnel with bulbous neck, the bulb of which is filled with a loose pledget of glass wool which to-day can be obtained at a very low figure. After filtration, the glass funnel is placed inverted in pure water, the glass wool being below the level of the water. In this way the pledget of glass wool is washed automatically, so that it will serve again for another filtration. Mucilaginous mixtures always filter with difficulty; therefore they are sought to be cleared by straining through a moistened small strainer, or through glass wool.

Inasmuch as salts, especially if powdered, be they ever so clean, are only too liable to give unclear solutions, as has been stated, and as the weighing, dissolving, and filtering consume much time, it is very convenient to keep on hand filtered solutions of frequently used salts. Of course, this can be done only with salts which do not decompose in aqueous solution.

Among the salts most frequently prescribed, the solutions of which do not spoil if made with very pure distilled water, are:

* The basis of this series of papers is the latest edition of Hager's "Technik der Pharmaceutischen Rezeptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany, and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

	Strength.
Ammonium chloride... 1 pt. in 4 pts. of water.	1 in 5
Potassium nitrate.....	1 " 4
Sodium nitrate.....	2 " " "
Magnesium sulphate.....	2 " " "
Sodium sulphate.....	4 " " "
Potassium bromide.....	2 " " "
Potassium acetate.....	2 " " "

The solutions of these salts—the latter of which, by the way, is officinal in the Germ. Pharm. as *Liquor Kali Acetici* (Solution of Acetate of Potassium)—are prepared with the greatest accuracy and care, and purified by filtration. These solutions are kept in bottles which are labelled so that the exact strength of the solution is accurately and plainly stated. *It must not be forgotten that the water of these solutions is to be deducted from the water in the mixture.* The objection that thereby the distilled medicinal water is curtailed is not a very serious one, because the latter is not the most active constituent of the prescription, and because it is impossible to avoid losses in the case of salts by straining, and of volatile portions of the distilled water by warming. An exception, of course, is to be made with Rochelle salt, phosphate of sodium, sulphate of sodium, sulphate of magnesia, which often have to be tolerably well divided in watery fluids dissolved in more considerable quantities. For instance, if 50 Gm. of sulphate of sodium were to be dissolved in 150–250 Gm. of *Aqua Menthae piperitæ*, the solution of the salt prepared with simple distilled water cannot be taken, but the solution of the salt is to be effected in the least possible, but warmed, quantity of the *Aqua Menthae*, in this case in 100 Gm. The remainder of the water is then added, cold. Should the distilled medicinal water, perhaps, be kept in stock in concentrated form, the employment of the above saline solutions would be particularly commendable.

Tartrate of potassium and Iodide of potassium, in stores doing a brisk business, are kept in stock, dissolved in equal quantities by weight of distilled water. The solutions of both salts, however, are liable to spoil. Therefore, no more of them should be kept on hand, in a dark place, than can be used in the course of eight or ten days, and they should be dispensed only if they are clear and colorless. These two qualities are the best and simplest signs of their good quality. The same remark applies to Tartar emetic (*Antimonii et Potassi Tartras*), 1 Gm. in 49 Gm. of water, the solution of which spoils in a very short time. This solution keeps much better if glycerin be added to it, for instance, 1 Tartar emetic, 40 distilled water, and 9 glycerin (strength: 1 in 50).

Sulphate of quinine (5 parts dissolved in 90 parts of distilled water and 5 parts of dilute sulphuric acid) is kept in stock in solution in some stores. This solution, however, seems likewise liable to spoil, for after some time mucilaginous flakes, which form at the expense of the quinine, separate. The directions for preparing durable solutions will be found under "Dispensing Facilities." Sulphate of quinine, if the physician has failed to order some acid for its solution, should be rubbed up fine in a mortar with a little water [and a little mucilage, as suggested by *Chem. and Drugg.*], and added to the mixture; but it has become customary to dissolve the sulphate of quinine always by an equal quantity of dilute sulphuric acid, without any objection having been raised by physicians, who even demand this addition. [In this country, this should be done only if it is known by previous conversation with the physician that such is his intention. Many American physicians intentionally prescribe the quinine salt so as not to have it dissolved, but merely kept in suspension, as the bitter taste is in this way greatly disguised. Of course a label, "shake the bottle,"

should be attached.—Ed. A. D.] Should the prescription leave it to the druggist to determine the amount of acid by a *q. s.*, we take for each 1 Gm. (or 15 grains) of sulphate of quinine, 20 drops of *Diluted sulphuric acid*, or 15 drops of *Aromatic sulphuric acid*, or 10 drops of *Hydrochloric acid*. [As remarked by a writer in the *Chem. and Drugg. Diary*, it is undesirable to dissolve quinine sulphate with hydrochloric acid, as the resulting solution is not fluorescent, and if the prescription happens to have been dispensed before with sulphuric acid, the patient may notice the difference and form an erroneous conclusion. The objection to hydrochloric acid, however, does not apply when the quinine mixture has a dark color.] Were the quinine sulphate put first into the bottle and the dilute sulphuric acid dropped upon it, it would change to a mass adhering to the bottom of the bottle, which can only very slowly be dissolved in water by vigorous shaking. Therefore the quinine is put into the bottle first, about 100 Gm. of water are poured over it, both are shaken up, and the acid added, when solution is readily effected by agitation. It is more correct to drop or weigh the acid into the bottle first, to add a portion of water, then the quinine, and, after agitation, to complete the quantity of water. It is not advisable to add the acid last to the completed mixture, as it thereby becomes too dilute and effects the solution too slowly. If *extract of liquorice* enters likewise into the mixture, it must first be dissolved and diluted with ten times its quantity of vehicle before it is added to the quinine solution, otherwise acid and alkaloid unite with the constituents of the *extract* into substances which float in the mixture in the form of lumps, here and there also adhere to the walls of the vessel, and give the mixture an objectionable appearance. If the quantity of vehicle does not suffice for the above-mentioned dilution, the quinine salt (together with any added acid, in this case *Hydrochloric acid* [We agree with "J. T.," in the *Chem. & Drugg. Diary*, that hydrochloric acid, in this case, is out of place. A much more presentable mixture may be produced by the intervention of acacia or tragacanth] is most appropriate) must be triturated with the *Extract of liquorice*, or its solution in the mixture mortar, with gradual additions of small quantities of the vehicle, and diluted by degrees. This operation is especially necessary where cinchona tinctures or iron preparations enter at the same time into the mixture.

Physician's prescription.

℞ Quininae sulphatis..... 1.0
Aque Tiliæ..... 150.0
Extracti Glycyrrhizæ... 15.0
M. D. S. Tablespoonful every 3 hours after shaking.

Preparation.

℞ Quininae sulphatis..... 1.0
Aq. Tiliæ..... 135.0
Mixtis adde
Acidi hydrochlorici. .gtt. 10.0
Agitatis admisce
Extr. Glycyrrh. liquidii.. 30.0

The addition of 10 drops of hydrochloric acid is to be marked on the prescription. Were it not made, and the quinine salt triturated with the extract of liquorice and some water, there would be formed in the mixture, after standing, a sediment consisting of quinine and glycyrrhizin which can be brought into suspension only after very vigorous shaking. The direction to shake the medicine thoroughly each time before it is taken, is but seldom sufficiently heeded. On the other hand, the sediment forming after addition of the acid is less adherent and more easily shaken up, besides being less bulky.

Iodine is very slightly soluble in water. If it be prescribed with *iodide of potassium* both substances are put into the mixture glass, and a small quantity of water is poured over them. Solution ensues readily. Potassium iodide cannot dissolve more than three-fourths of its weight of iodine. Without the above salt, or else ammonium salts which greatly promote its solubility in water and with which it could be rubbed up in the mortar, it can be incorporated if it be previously intimately triturated with twice the quantity of sugar. [This is not a safe plan, since a larger bulk of free iodine is liable to come into more intimate contact with any single portion of the mucous membrane of the stomach than if it had been given in solution. We would in such a case much prefer to endeavor to consult the prescriber.—Ed. A. D.] Iodine mixtures, naturally brown solutions, which contain *etheral* or *tannin bodies*, are decolorized soon after their preparation, the iodine entering into chemical combination with some one of the constituents of the mixture (the ether or tannin), as for instance in the following mixtures:

Gm.
℞ Iodi..... 0.15 | gr. 2½
Elæosacchari Menthae
piperitæ..... 10.0 | gr. 150
Aque destillatæ... 200.0 | f 3. 6½
Solve et misce.

Gm.
℞ Iodi..... 0.1 | gr. 1½
Potassii Iodidi..... 0.2 | gr. 3
Tinc. Aurantii..... 10.0 | f 3. 2½
Syrupi..... 50.0 | f 3. 1½
Aque Menthae pip. 150.0 | f 3. 4
M. D. S., etc.

Here the oil of peppermint fixes the iodine chemically, and similarly act oil of fennel and some other volatile oils.

Sugar dissolves easily in water, but without giving a perfectly clear solution. In its place is taken 1.66 times (1⅔) its quantity of *Syrupus Sacchari* or *Simplex*, and 0.66 times (⅔) the weight of the latter is deducted from the menstruum. Instead of 10.0 Gm. (150 grains) of sugar, 16.6 Gm. (256 grains or 200 min.) of *Syr. simplex* are to be taken. [Of the Syrup of the U. S. Ph., 100 parts by weight contain 65 parts of sugar; hence, when 10 Gm. (or about 150 grains) of sugar are wanted, 15.4 Gm. (ab. 230 grains), or by measure, 185 minims of Syrup may be taken.]

Manna is to be dissolved by the aid of heat. The solution is purified by decantation and straining. ["Direct heat should never be applied to effect its solution. Allow the manna to macerate in just enough cold water to change it into a soft, pasty mass; then add the remainder of the water and dissolve by gentle heat. Strain through fine muslin. Time and trouble will be saved by this process; and the manna will not crystallize out of the solution, as would otherwise be the case."—J. T. in *Chem. and Drugg. Diary*.]

Gum Arabic may be discussed in this connection. Although its powder dissolves easily in water, with which it should be mixed by simple rubbing in the mortar, still its solution is not free from particles of dust, and as its straining consumes time, the officinal *Mucilago Acaciæ* (*Mucilago Gummi Arabici*) is employed, which contains in 3 parts 1 part of gum. [J. T., in *Chem. and Drugg. Diary*, very justly remarks that the application of heat to dissolve gum arabic is an ingenious method of producing a bad preparation for the sake of saving time. The practice has been adopted in first-class establishments of employing only small picked gum ["extra"], allowing it to macerate in cold water until dissolved, and aiding solution by occasional stirring with a bone spatula [or stout glass rod]. Such mucilage will keep any reasonable length of time, and is

remarkably clear and bright.] *Gum Senegal* should not be used in prescriptions, as it differs from gum arabic by its acid taste and unpleasant odor, as well as by its chemical behavior toward metallic salts.

Tannic acid, or tannin, dissolves readily in water with a faintly yellow color. The water must be distilled and be free especially from ammonia. Otherwise the originally straw-yellow solution becomes much darker in the course of twenty-four hours, even brown. Tannin is incompatible with *alkaline* substances, and the solutions soon become turbid and brown to black, in consequence of a gradual oxidation of the tannic acid. For instance:

R. Acidi Tannici.....	Gm. 2.0	gr. 30
Sodii bicarbonatis..	5.0	gr. 75

Solve in

Aque Menthae pip.	150.0	f 3 5
Syrupi	50.0	f 3 14

D. S.

This mixture becomes brown in a few hours, if frequently shaken, and almost black in from seven to eight hours.

It is well known that tannin forms inky solutions with ferruginous substances or such as are tainted with iron; hence, even the bottles for mixtures must be rinsed with distilled water (not perhaps with ferruginous well-water).

Tannic acid, moreover, does not dissolve directly in mucilage of *Irish moss*, *salep*, *althaea*, etc., and forms with them flaky agglomerations. Therefore, before being added, it should be separately dissolved in 20 times the quantity of distilled water, if a clear or tolerably clear mixture is to result, which is certainly the intention of the physician.

Chloral hydrate cannot be kept in stock in aqueous solution, because it gradually decomposes in contact with water and becomes acid. [In establishments where solution of Chloral Hydrate is frequently called for, a strong standard solution is very useful and keeps well for quite a while. We have, for years, used a stock-solution of the strength of 1 grain in 2 minims, and as it is used up within a week, or less, we never found it to become acid or to spoil.] Should a solution of chloral hydrate not be free from particles of dust, it should be filtered through a loose pledget of glass wool. That the solution must not be effected in warm water or hot infusion has been mentioned above.

MIXTURES WITH SUBSTANCES WHICH ARE ALMOST OR QUITE INSOLUBLE IN WATER.

Before being added to the mixture, insoluble powders must be thoroughly moistened and divided by trituration in a mortar with a suitable quantity of the vehicle. It is risky to pour them into the fluid and mix them therewith by agitation, for most of them cake into small balls, and in that form float about in the mixture in an unsightly manner. This is true especially of vegetable powders, and also of *carbonate of magnesium*, *calomel*, and *precipitated sulphur*.

Powdered *ipecac* can be divided by agitation, if care be taken to pour this powder into the fluid and then to shake it at once. If it be put first into the empty bottle and then the fluid weighed in, it will soak up some of the latter and adhere firmly to the bottom, or else form a doughy mass which requires much shaking and time for its division. The most correct way will always be to rub up the powder with some syrup, mucilage of *acacia*, etc., if such viscid fluids enter into the mixture.

Powdered *cream of tartar* can be easily divided by agitation with water.

Musk requires prolonged trituration

in a mortar with a few drops of the fluid of the mixture (simple syrup). (Of course, the inert little hairs and membranes should have been previously removed.) It is advisable to keep on hand in a corked bottle a finely divided mixture composed of one part of *musk* and two parts of *milk-sugar* which has been passed through a sieve.* From this, musk mixtures can be rapidly prepared.

Gum resins. Comp. under Emulsions.

Powdered salep root, if added to the cold mixture, swells up viscidly and after some time adheres to the bottom of the vessel in the form of a mucilaginous mass which no amount of shaking can dissipate. If the division be effected in hot water, it furnishes a uniform mucilage. In order to prepare this, salep powder of extreme fineness is poured into the mixture bottle containing ten times the weight of cold water, at once shaken vigorously, to this is immediately added the almost boiling hot water (infusion, decoction), and then the mixture is vigorously agitated. This operation cannot be done as well in the mixture mortar because the particles of salep adhere to the wall of the latter. Unless the physician has ordered another quantity, we take for one hundred parts of *mucilago salep* one part of salep powder; for *mucilago salep tenuis*, half that quantity. Where the physician prescribes a *decoctum salep*, he means by that the official *mucilago salep*, prepared according to the above directions, hence it must not be strained. But as it requires a certain knack to mix the salep powder in the above-described manner equably with the fluid and prevent the formation of lumps which are hard to dissipate by shaking, a finely divided mixture of equal parts of powdered salep and sugar is very frequently employed in order to have less uncertainty in the preparation.

Mucilage of tragacanth is prepared thus: The tragacanth powder is poured into a mixture mortar, rubbed up with half the quantity of sugar, mixed with fifty times its weight of cold water by friction with a large pestle, and this mixture thinned with an equal quantity of cold water. Where the official pharmacopoeia gives no positive directions for the preparation of mucilage of tragacanth, it is made in the proportion of one part of tragacanth to one hundred parts of water.

Starch, like salep powder, after having been rubbed up with five times the quantity of cold water in the mortar, is dissolved in boiling hot water. Where the prescription does not specify the kind of starch, *Wheat Starch* [or corn starch] should be used. *Mucilage or Decoction or Solution of Starch*, where the prescription does not state the quantity of starch powder, consists of 1 part of starch to 5 parts of cold and 95 parts of boiling water, prepared according to the preceding directions.

Cetaceum is rubbed into a state of minute subdivision by the aid of a few drops of alcohol and, after being mixed with simple syrup or sugar, added to the mixture, unless it is intended for an emulsion. (See Emulsions.)

Glandulae Lupuli and *Kamala*, if required in the form of a mixture, are rubbed up in a mortar with a part of the syrup or the sugar or the gum arabic, should these enter into the mixture. If the vehicle consist of water only, the rubbing up, of course, can be done with that alone; however,

the use of an equal weight of gum arabic for the purpose of division would seem to be always justifiable.

MIXTURES WITH VOLATILE SUBSTANCES.

Where volatile substances are to be added to mixtures, the latter must not be hot. Hence the hot-prepared salt solution, decoction, etc., should be allowed to cool if it is to be mixed with very volatile substances, *e. g.*, the ethers. This rule must never be disregarded. Very often we cannot avoid warming waters containing volatile substances, such as the distilled vegetable waters, for the purpose of making them dissolve substances, but the warming must not be increased to the boiling heat. The mixture of ethereal oils with water is effected by vigorous agitation of the oil with the water at about 40° C. (104° F.). Particles of oil remaining undissolved are separated by straining. Should the prescription call for the previous trituration of the oil with sugar, that is, the preparation of an *elaeosaccharum*, the oil should be intimately mixed with the sugar by trituration in the mortar and then added to the mixture. If there be ordered at the same time alcoholic or ethereal liquids, the oil might also be dissolved in them. [There are two other modes employed in this country; one consists in the mixture of an essential oil with carbonate of magnesium, mixing this with the water to be medicated, and then passing the water through a paper filter. The oil dissolved by the water will also penetrate the filter, while the magnesium carbonate is arrested. The other mode is the one directed by the pharmacopoeia, and consists in saturating absorbent cotton with the oil, and then packing into a percolator and treating it with the water. For details see the pharmacopoeia.]

Camphor is rubbed up in a mortar as small as possible with a few drops of alcohol, then well mixed with three times its weight of *gum arabic*, and by gradual addition of small quantities of water and friction prepared for being mixed with a larger amount of water. It is not advisable to dissolve it in the alcohol which is at the same time to be added to the mixture, as for instance the *spiritus aethereus*, etc. In that case the camphor, on the addition of water, separates in coarser particles which float on top.

Carbonic acid. See Saturations.

Chlorine water is always added last to the cold mixture. If weighed first into the bottle, it fills the vacant space of the latter with chlorine gas. This, when the remaining fluids are added, is expelled from the bottle, and then both annoys the dispenser and rises into the vessels from which the additions are made. When mixed with syrup and water, it changes but very slowly (in one and a half days), for which reason it is dispensed in opaque bottles; but in connection with mucilaginous, and also with extractive matters it changes soon (in half an hour) into hydrochloric acid. If the mixture contain ethereal substances, ethereal oils, or vegetable waters, the free chlorine is sure to become fixed in the course of half an hour, and the chlorine odor disappears. In these cases, an opaque mixture bottle would be unnecessary, but is used nevertheless in order to comply with the wish of the prescriber.

Alcoholic and ethereal fluids containing ethereal oils or resinous substances are added to the watery vehicle. If a saccharine liquid be ordered at the same time, they are first mixed with this. (See above.) *Extracts, Succus Liquiritiae dep.*, etc., in solution should be diluted with some water before the above-mentioned fluids are mixed with them, or else their solutions are added to the alcoholic liquids which have been previously diluted with water.

(To be continued.)

* Sieves for small quantities of powder can be improvised from a powder box from which top and bottom have been removed, the hoop of the lid being used to stretch a piece of smooth gauze over the top of the box. It will be handy to get two hoops made of tin, one of which should be much narrower and fit loosely over the other, so that by means of the former the gauze can be smoothly stretched over the other.

They can be cleansed and freed from odors by washing. It causes but little trouble to fit in a new piece of gauze according to requirements.

THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 2. WHOLE No. 128.

FRED'K A. CASTLE, M.D., - EDITOR.
CHAS. RICE, PH.D., ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

FEBRUARY, 1885.

SUBSCRIPTION PRICE per year, \$1.00
SINGLE COPIES, 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & CO., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

Report of the Massachusetts Analyst of Drugs.

THE report of Prof. B. F. Davenport, of Boston, on the analysis of drugs sold in Massachusetts, forms one of the most interesting features of the latest report of the State Board of Health. The entire report covers 22,800 pages and is full of interesting details. We regret that our space will prevent the reproduction of more than a summary.

Powdered Opium: Of the 46 samples examined, one only exceeded the allowable maximum of 16 per cent [of morphine], while only 6 samples fell below the minimum limit of 12 per cent, although several of them appear to have been reduced by sugar of milk.

Tincture of Opium: Of 100 samples, obtained through the State, 4 exceeded the maximum limit of 1.60 per cent of morphine, while 82 samples fell below the minimum of 1.20 per cent; 45

samples contained about 1 per cent of morphine, which was required by the U. S. P., 1870, if assayed by the modern process of the U. S. P., 1880.

Morphine Salts: The 10 samples examined were all found to conform to the pharmacopoeia requirements.

Powdered Cinchona Bark: 10 samples examined, all bought as samples of good barks. 8 fell below the pharmacopoeial minimum of at least 3 per cent of total alkaloids.

Salts of Cinchona Alkaloids: 28 samples, of which 8 contained an excess of other, and cheaper alkaloids. They lost upon fully drying at 100° C. from 2.5 to 10 per cent of moisture.

Citrate of Iron and Quinine: 40 samples were examined; 34 fell below the the pharmacopoeia's quantity of 12 per cent of quinine. Two samples, however, of these contained the full amounts claimed in their labels, being soluble 10 per cent quinine preparations. Most of the others, although the pharmacopoeial article had been called for, were the non-official form of this preparation, green and containing ammonia. This preparation—in this State, at least—has well-nigh wholly supplanted the U. S. P. brown scale form, and usually without any notice being made of it.

Strychnine: 4 samples, two of which were the free alkaloid and two sulphates. Two gave slight traces of the presence of brucine, but conformed to the requirements in all other respects.

Powdered Jalap: 12 samples examined, but one of which conformed to the U. S. P. 1880 requirement of yielding not less than 12 per cent of resin, of which not over 10 per cent should be soluble in ether.

Beeswax: 4 samples, two of yellow and two of white. Three of them contained paraffin.

Chloroform: 6 samples, half of which were free from empyreumatic oils, and all were free from chlorine compounds.

Alcohol: 2 samples, both of which conformed to the requirements.

Ether: 2 samples, both of which conformed to the requirements.

Creasote: 10 samples, of which 6 proved to be crude carbolic acid.

Acids: 35 samples, most of which equalled the pharmacopoeial standard, 7 falling below the proper strength or quality.

Alum: 4 samples examined, two of which were not pharmacopoeial.

Ammoniacal Salts: 10 samples, of which only 5 conformed to the requirements.

Bromide of Potassium: 10 samples examined, none of which conformed to the full requirements of the U. S. P., 1880. This is partly explained by the senseless trade custom of demanding that the salt shall appear in white, opaque crystals instead of the purer form of colorless, translucent crystals of a neutral reaction.

Iodide of Potassium: 10 samples, none of them conforming to the pharmacopoeial requirements for substantially the same reason as in the case of the bromide.

Bicarbonate of Sodium: Two of the five samples examined contained large excess of the chloride and the carbonate.

Salicylate of Sodium: All of the 4 samples were good.

Precipitated Sulphur: 15 samples. All contained free acid, but in other respects 12 samples were not the precipitated sulphur of the U. S. P. Seven of them contained from 53.7 to 66.5% of gypsum.

Powdered Drugs: 192 specimens of 26 different kinds of powdered official drugs; 36 specimens were found adulterated, viz.: *Capsicum*, 1, with an unrecognized material; *Caryophyllus*, 2, with oil removed; *Cinnamon*, 2, with cassia substituted; *Ipecac*, 5, with wheat flour and starches added; *Jalap*, 11, with resin deficient; *Mace*, 1,

with oil removed and flour added; *Maranta*, 1, with potato-starch substituted; *Rhubarb*, no foreign material, but many samples evidently poor; *Saffron*, 2, with safflower substituted; *Senna*, 1, with an unrecognized material; *Ulmus*, 13, with wheat-flour.

THE action of the Fire Department of this city in requiring of retail pharmacists payment of a license fee for the sale of combustible articles has lately been more than supplemented by the Board of Excise, which has ordered the collection of a license-fee of \$75 from every pharmacist who retails alcohol, liquors, or tinctures; in other words, the pharmacist is required to have a *saloon license*.

The value of a local trade organization can be no better shown than in such an emergency. Already a meeting of about two hundred members of the Druggists' Union has been held, the Committee on Trade Interests have secured a respite in the enforcement of the measure for a few days, and there will be an attempt to take the matter into court in the shape of a test case, or an injunction upon the action of the Excise Board. Unfortunately there are not a few pharmacists who have for some time past surreptitiously retailed drinks, and in some instances, it is said, the sale of pharmaceuticals has served as a disguise for the other traffic, rather than as a legitimate source of revenue.

This condition of affairs is not restricted to the druggists, but is also true, to some extent, of the grocery-trade. One instance is known to the writer where an arrangement of chests of tea and canned vegetables serves to cover from observation a bar from which, so it is said, more liquor is sold than from any saloon in the neighborhood.

We cannot believe that in the case of either pharmacists or grocers there is any other sufficient cause for this evil than the stress of competition. In both instances, the number of dealers is so large that the legitimate trade of each is hardly sufficient for his support, and ingenuity is exercised in every possible direction to increase the profits of the business.

The outlook, in the present instance, is by no means favorable for those who have allowed themselves to be drawn into the liquor traffic. We cannot think that the license can be extorted from those who sell alcohol, medicinal wines, and tinctures alone, but it will not be so easily avoided by those who also have in stock wines and liquors of the ordinary character. It will be a misfortune for the public, when the pharmacist ceases to sell, for use as a medicine, pure liquors and unadulterated wines, but there is no reason why a saloon-license should be forced upon him, when he sells such articles in original packages or upon a legitimate prescription. Neither is there any reason why a pharmacist who also engages in the business of selling liquor to be drunk on the premises should not pay for the privilege of doing so, and pharmacists generally owe it to themselves to see that those who engage in this business are known to the Excise Board. In no other way can they avoid the loss of public confidence or preserve the reputation for professional character which is so extremely desirable.

We hope that in the efforts made before the Courts, there will be no general denial of the ground for the exaction of a license-fee, for evidence that liquor is bought to be drunk on the premises will not be difficult to obtain in the case of some establishments, but the Board of Excise should be required to have such knowledge before demanding the payment of a license fee.

TESTING OLIVE OIL.

On page 44 of our last volume we gave an abstract of a paper by Professor Serra Carpi (from *Annali di Chimica*, Sept., 1883), in which the author bases a method of discovering cotton-seed oil in olive oil upon the firmness and resistance of the elaidin produced by treating the oil with nitric acid.

The above method has been indorsed and perfected by L. Legler, who has also devised a simple apparatus for its execution.

A piece of combustion-tubing *a* is rounded off at one end, and an aperture left in it, through which the glass rod *c* can freely pass up or down. At *f*, the rod is provided with a shoulder, and between the latter and the bottom of the tube is a weak spiral spring *e*, so adjusted that weights of 20 to 50 Gm., placed on the small wooden top *b*, distinctly depress the rod; on the other hand, it must remain elastic

enough to permit the glass rod being pressed down more and more, when an increased weight is put on top. The point up to which the rod sinks to the level of the upper lip of the tube *a* is marked by 0, and from this point upwards a millimeter scale is engraved on the rod. For use, the tube *a* is fastened in a retort-stand, and the elaidin layer adjusted below, so that the rounded point of the glass rod just touches the surface, while the mark 0 is exactly on a level with the upper edge of the tube *a*.

The elaidin-layer is obtained by mixing 10 cubic centimeters of the oil, 10 Cc. of 25% nitric acid and 1 gramme of copper wire, waiting until all development of gas ceases, and after 24 hours, remelting the mass once, or, if possible, twice, by placing the container into warm water. The layer thus obtained is now tested as to its firmness, by placing

weights on top of the rod, and reading off the mark up to which the rod sinks into the mass during a given time, *f. i.*, one minute.

It has been ascertained that both the pure and the crude olive oil behave alike under this treatment, but olive oil containing much free acid (20 per cent and over) yields an elaidin which is about one-fourth less firm.

As the author does not give any definite figures (weight or point of immersion of the glass-rod), those who intend to use the method will do well to experiment at first with olive oil of known purity, and afterwards with mixtures or foreign oils, in order to prepare their own data.—*Chem. Centralbl.*

Reactions of Quinine and Morphine.

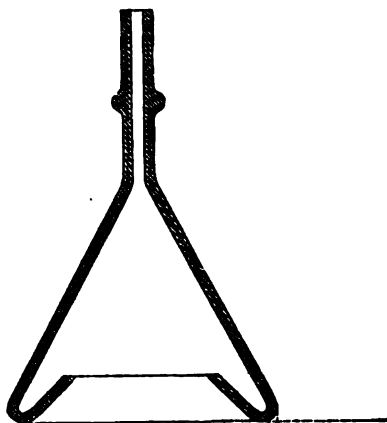
QUININE may be recognized even in very dilute solution (as low as 1 in 60,000) by adding to it successively bromine-water, ferrocyanide potassium, and borax. The limit of recognition may be carried as far as 1 in 500,000, if the ferrocyanide of potassium is replaced by cyanide of mercury, and the borax by precipitated carbonate of calcium.

According to Bloxam, a rose-red color is produced if quinine is boiled with bromine solution; in this case the limit, in acid solution, is 1 in 15,000. If carbonate of calcium is added before the bromine, the limit rises to 1 in 50,000. A strong solution, under these circumstances, turns violet in

the cold, blue when heated, and becomes again violet on the addition of more bromine.

A neutral solution of quinine (1 in 50,000) boiled with an excess of bromine until the excess has been driven off, and then cooled, shows a fine green fluorescence.

Morphine, when boiled with excess of bromine water, yields a light-red solution, if the liquid is neutralized with carbonate of calcium, and then again boiled—provided the proportion of morphine is more than 1 in 1,200. If less is present, the liquid turns orange or brown, and becomes bleached by the addition of more bromine water.—*EL LOART in Chem. News.*



COVER FOR EVAPORATING DISHES.

For covering evaporating vessels, Victor Meyer recommends the use of a funnel with inverted edge, as shown in cut. The vapor of the liquid becomes partly condensed, by coming in contact with the sides of the funnel, and runs down into the gutter formed by the inverted edge. The funnel is occasionally removed and emptied of liquid.—*Ber. d. Deutsch. Ges.*

Influence of Copaiba upon the Urine.

AFTER the administration of copaiba, the urine, when treated with hydrochloric acid, acquires a light red, afterwards purple tint, which gradually passes into violet and later is yellowish-red. Nitric and concentrated sulphuric acid act similarly, but these acids appear to favor the rapid decomposition of the coloring matter.

Urine containing this coloring matter ("copaiba-red"), whether treated previously with hydrochloric acid or not, reduces alkaline copper solution, though the previous treatment with the acid delays the separation of cuprous oxide. Knapp's solution (of bismuth), however, is not reduced. [It would seem, therefore, that it is always safest to try both Fehling's and Knapp's test qualitatively, in order to avoid a wrong diagnosis.—*Ed. A. D.*] This "copaiba-red" is regarded by Dr. Quincke as an acid which yields easily soluble, colorless salts, only decomposable by mineral acids. The same author also observed that the addition of hydrochloric acid, besides producing the above-mentioned red color, also caused the separation of a resinous substance, at first colorless, but gradually becoming muddy-violet, which substance he supposes to be formed from the copaiba red.—*DR. H. QUINCKE in Arch. f. exper. Pathol.*

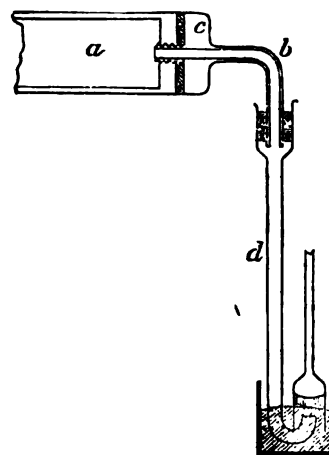
Artificial Cod-Liver Oil.

It is reported that some parties in Paris manufacture a spurious cod-liver oil by macerating herrings in a good quality of olive-oil, whereby they obtain a light-colored product having the faintly fishy odor of Norwegian cod oil. If the fish are allowed to lie in the oil during eight or ten days, a brown "cod-liver oil" is obtained. The fish are afterwards allowed to drain, dried, and sold again.

APPARATUS FOR THE RAPID PREPARATION OF LARGE QUANTITIES OF OXYGEN.

The following apparatus, which was devised for the purpose of furnishing large quantities of oxygen gas at will and at any rate of delivery, will be found of practical interest.

A horizontal wrought-iron tube *a*, one meter long and 4 centimeters in interior diameter, is carefully closed by welding at one end (not shown in the cut); the other end is narrowed and tapped with a hole of the diameter of 1 centimeter. An iron tube *b*, of $\frac{1}{4}$ centimeter calibre, fits into the thread of the tube, but anteriorly passes through a gas-tight disc *c* of the diameter of the tube *a*. The latter is charged with 700 to 800 Gm. ($1\frac{1}{2}$ to $1\frac{3}{4}$ lbs.) of chlorate of potassium in such a manner that a channel is left for the passage of the oxygen gas; a lead-ring is placed between the head of the tube *a* and the disc *c*, and the tube *b* then screwed into its socket as tight as possible. Both the outer surface of the head of *a* and the face of the disc *c* are provided with concentric rings, into which the ring of lead is forced by pressure, making a gas-tight joint. The tube *b* is bent at right angles with a descending



branch of 8 cubic centimeters in length and is connected by means of a perforated cork with the expanded portion of a glass tube of the internal diameter of $\frac{1}{4}$ centimeter. In order to render the cork gas-tight, a layer of mercury is poured on top of it. The glass-tube *d* has the usual length of a barometer, and ends under mercury over a bell-glass, from which the gas is conducted to wherever it is wanted. A little solution of potash is poured on top of the mercury in the bell-glass, for the purpose of washing the gas.

The chlorate of potassium is heated by means of a triple Bunsen burner, the heat being applied at first near the closed end. The gas begins to be developed in a short time and its volume may be easily regulated. A single charge of the tube *a* furnishes about 200 liters (52.8 gallons) of oxygen gas. As soon as enough of oxygen has been evolved to drive all the air (nitrogen, etc.) out of the apparatus (which may be hastened by a previous exhaustion with the vacuum-pump), it furnishes an ever-ready and never-failing source for pure oxygen gas. When the generation of gas is stopped, the mercury in the tube *d* rises a certain distance, and the elevation of the mercury is a sure test of the tightness of the apparatus.—*B. TACKE, in Ber. d. Deutsche Chem. Ges., 1884, 1831.*

Stopper Cement.—Recently a new cement has been recommended for securing glass-stoppers, which consists of finely-powdered oxide of lead and concentrated glycerin, and need only be smeared around the stopper. It dries quickly and becomes very hard, but can easily be scratched off with a knife. Its applicability in the case of bottles containing acids, particularly nitric acid, requires further experiments.—*Deutsch. Am. Apoth. Zeit.*

A Generally Applicable Method for the Examination of Fats and Oils.*

ALMOST all fats contain members of three groups of fatty acids, namely that of acetic acid, to which stearic and palmitic acid may be reckoned; that of acrylic acid, to which oleic and erucic acid belong; and that of linoleic acid. It is probable that the relative quantity of each of these acids in one and the same fat (if at all present) varies under different circumstances; and that it also varies in different oils. Regarded from a chemical standpoint, these three classes of fatty acids exhibit a characteristic difference in their behavior towards halogens [we substitute this term for that of "haloids" used by the author—Ed. A. D.]. While the first class is usually indifferent towards these substances, the second easily takes up, by addition, two atoms, and the third four atoms of a halogen. Hence the first group may be regarded as containing "saturated," and the second and third "unsaturated" fatty acids.

If it is then possible to cause a halo-

tice, if it were not that it acts only very sluggishly upon fats in the cold, while at higher temperatures it is very irregular in its action. A very excellent reagent accomplishing all the desired effects is produced by adding to an alcoholic solution of iodine some mercuric chloride. This mixture reacts even at ordinary temperature with the unsaturated fatty acids, under formation of chlorine and iodine addition products, while it leaves any saturated acids, present at the same time, unaltered. The mixture acts upon the glycerides (oils), as well as upon the isolated fatty acids, which circumstance facilitates the use of the reagent for the volumetric determination of the oils.

For this purpose, a weighed portion of the fat is treated with a suitable excess of the reagent, the volumetric value of which is exactly known; the product, after the reaction is terminated, is diluted with water, and, after addition of iodide of potassium, the excess of iodine determined volumetrically. Practically, it is immaterial whether only iodine, or iodine

The process requires the following solutions:

1. *Solution of Iodine with Mercuric Chloride.* Dissolve about 25 Gms. of iodine in 500 cubic centimeters, and 30 Gms. of mercuric chloride in the same volume of pure 95% alcohol. Filter the latter solution, if required, and then mix it with the former. As the titer, probably owing to the traces of foreign substances in the alcohol, changes quite rapidly in the freshly-prepared mixture, it should be set aside for at least twelve hours, when it may be used for the first time. For brevity's sake, this solution is hereafter called "Iodine Solution."

2. *Solution of Hyposulphite of Sodium.* Dissolve about 24 Gms. of the salt in one liter of water. The strength or titer of this solution is determined by using it against known quantities of pure sublimed iodine, in the usual manner. This solution, though not absolutely permanent, yet keeps sufficiently well to make all but extremely exact or delicate determinations which is not the case here.

3. *Chloroform*, which must be tested for its purity by adding to about 10 C.c. of it, 10 C.c. of the "iodine solution," and titrating after two or three hours the amount of iodine, both in the prepared mixture and in a separate sample of 10 C.c. of the "iodine solution." If both assays yield identical results, the chloroform is pure.

4. *Solution of Iodide of Potassium.* An aqueous solution of 1 in 10.

5. *Starch-solution*, freshly prepared, of the strength of one per cent.

Fats and Oils.	Mean Iodine Number.	Lowest and Highest Number	Melts at.	Solidifies at.
Linseed Oil.....	158	156-160	17.0	13.3
Hemp Seed Oil.....	143	—	19.0	15.0
Nut Oil.....	143	142-144	20.0	16.0
Poppy Seed Oil.....	136	135-137	20.5	16.5
Sesame Oil.....	106	105-108	26.0	22.3
Cotton Seed Oil.....	106	105-108	27.7	30.5
Peanut Oil.....	103	101-105	27.7	23.8
Rape Seed Oil.....	100	97-105	20.1	12.2
Peach Kernel Oil.....	100	99-102	4.5	0.0
Almond Oil.....	98.4	97.5-98.9	14.0	5.0
Castor Oil.....	84.4	84.0-84.7	13.0	3.0
Olive Oil.....	82.8	81.6-84.5	26.0	21.2
Olive Seed Oil.....	81.8	—	—	—
Bone Oil.....	68	66.0-70.0	30.0	28.0
Hog's Lard.....	59	57.6-60.0	—	—
Artificial Butter.....	55.3	—	42.0	39.8
Palm Oil.....	51.5	50.4-52.4	47.8	42.7
Tallow.....	40	—	45.0	43.0
Cacao Butter.....	34	—	52.0	51.0
Butter Fat, true.....	31	26.0-35.1	38.0	35.8
Cocoa Nut Oil.....	8.9	—	24.6	20.4
Japan Wax.....	4.2	—	—	—

gen to combine (by addition) with a fat under substances which exclude a substitution (that is, where the halogens do not displace a corresponding number of atoms of the molecule of the fatty acid), and if it is possible to determine the precise amount of the added halogen, it results that for each fat there must be obtainable an almost constant number, which depends upon the kind and relative proportions of the unsaturated acids, and is intimately connected with the chemical constitution of the fat. And as the molecular values of the naturally occurring unsaturated fatty acids differ, it follows that the quantity of halogen required to saturate different fats must also differ.

Theoretically, the following unsaturated acids occurring in fats require the amounts of iodine set opposite to them for saturation:

100 Gm. of	Add Iodine
Arachic acid $C_{18}H_{34}O_2$	100.00 Gm.
Oleic " $C_{18}H_{32}O_2$	90.07 "
Erucic " $C_{22}H_{40}O_2$	75.15 "
Ricinoleic " $C_{18}H_{32}O_2$	85.24 "
Linoleic " $C_{18}H_{32}O_2$ (binary)	201.59 "

Of the halogens, iodine would be undoubtedly the most suitable in prac-

and chlorine, or in what proportion either of these has entered into combination, since both elements are entirely equal in value under the above circumstances.

Experiments have shown that, in order to utilize all the available iodine, the reagent must contain for each 2 atoms of it, at least, 1 molecule of mercuric chloride. As most fats are but slightly soluble in alcohol, the reaction is facilitated by the addition of a little chloroform, which is entirely indifferent towards the iodine.

The alcoholic solution of iodine and mercuric iodide, however, possesses the disagreeable property of being but indifferently stable. It is evident that the iodine exerts progressive, though slow, action upon the alcohol. A freshly-prepared solution had the following titer, corresponding to 1 C.c.:

Freshly made.....	0.01900 Gm. Iodine.
After 10 days.....	0.01715 " "
After 20 days.....	0.01552 " "
After 30 days.....	0.01451 " "
After 40 days.....	0.01410 " "

Hence it is necessary, when about to use the reagent, to make a preliminary titration in order to find its exact value for the time being.

Of drying oils, 0.2 to 0.3 grammes are weighed out, of non-drying oils 0.3 to 0.4 Gms., and of solid fats, 0.8 to 1.0 Gm.; the fat or oil is now dissolved in about 10 C.c. of chloroform, whereupon about 20 C.c. of the iodine solution are added. If the liquid, after agitation, should not be completely clear, a little more chloroform must be added. Should the mixture become almost entirely discolored after a short time, this would indicate that an insufficient amount of iodine was present in this case, 5 or 10 C.c. more of iodine solution must be allowed to run in. The quantity of the latter must be so large that the liquid appears still of a deep brown color after 1½ to 2 hours. At the end of this time the reaction is completed, and the amount of the remaining free iodine is determined. For this purpose 10 to 15 C.c. of the solution of iodide of potassium are added, the mixture agitated, and then diluted with about 150 C.c. of water. A portion of the iodine is in the aqueous liquid, another portion in the chloroform which has become separated on dilution and retains the iodized oil in solution. From a burette divided into ½ C.c., enough hyposulphite solution is now allowed to flow in to cause the color of the liquid to become quite pale. A little starch solution is now added, and the titration carefully completed with the "hypo" solution, and under frequent agitation, the flask being meanwhile closed. Immediately before and after the operation, 10 or 20 C.c. of the iodine solution, mixed with iodide of potassium and starch, are titrated in the usual manner. The mean of the values obtained here indicates the strength of the iodine solution at the time of its use. It is useful to give the quantity of iodine in percentages referred to the fat, and this figure is here designated, for brevity's sake, as "iodine number."

If the results obtained by the method are arranged systematically, the above table (from which we have omitted a few rarer oils or fats, and also a few columns which have no direct bearing on the present paper) is obtained. From this it will be seen that linseed oil stands at the head of the list with its large "iodine num-

* Abstract of a paper by J. Hübl in Pharm. Post, Nov. 8th and 14th.

ber." Any kind of foreign oil added to it must show a decrease of this number. Boiled linseed oil shows a less energetic absorption; one sample showed 156 before and 148 after boiling. Group II. contains oils which differ but little from each other. The first three members of Group III. differ but little in their iodine number; but they may be distinguished by other properties, such as their behavior towards certain acids, as well as the melting point of their fatty acids. The fatty acids of cotton-seed oil possesses the highest melting point among all vegetable oils, and this circumstance is very valuable in the examination of cotton-seed oil.

The method affords a ready means of determining the nature of a fat. In case of a mixture of two known fats or oils, the proportion of each present can be readily calculated. Let x be the per cent of one fat, and y that of the other, then $x + y = 100$; and if m is the iodine constant for the fat x , and n that of the fat y , and if the number found for the mixture is J , then the quantity of the fat x present in the mixture is readily calculated from the equation:

$$x = \frac{100(J-n)}{m-n}$$

For example, a commercial olive oil gave on examination 97 as the iodine constant; it was therefore adulterated with a considerable quantity of some other oil. The melting point of the free fatty acids was found to be 30°C . This indicated the presence of cotton-seed oil, which was confirmed by other tests. Then by substituting in the above formula, the quantity of cotton-seed oil was 60 per cent.

Notes on the Estimation of Lead in Aerated Waters.

I RECENTLY received from an inspector under the Sale of Food and Drugs Act a sample of lemonade, which I certified to contain $1\frac{1}{2}$ grains of lead per gallon. The estimation was made calorimetrically with sulphuretted hydrogen, and the presence of lead was confirmed by chromate of potassium which gave an immediate turbidity in the unconcentrated sample. In consequence of my certificate, the vendor was summoned before the magistrates at Olney Petty Sessions, when his solicitor produced a certificate from Mr. F. Rimmington, of Bradford, stating that the sample contained 0.5 grain of lead per gallon. In consequence of the discrepancy between our certificates, the remaining portion of the sample was referred to Somerset House, whence, in due course, a certificate was received stating that the sample contained $\frac{1}{2}$ grain of lead in 10 oz., and that this proportion was within the limits of accidental impurity. Calculated on the gallon, the amount of lead found by Somerset House is 0.30 grain per gallon, but of course the Bench did not understand this, and the defence took care not to tell them; while I, the unfortunate analyst, had not even been informed that my certificate was in dispute. The result was that the case was dismissed, together with another in which the facts were similar; but the magistrates decided to reserve the question of costs till they learned whether any explanation was forthcoming. Thus, at length, I have heard of the case, and have had an opportunity of calling attention in writing to the following facts [which will interest many of our readers.—ED. A. D.]

The samples were never divided at all. Three closed bottles of each were purchased, sealed by the inspector, and duly distributed between the vendor, the analyst, and himself. It is evident that the contents of the three bottles should have been mixed (in a jug),

and then divided, if so required by the defendant. Seeing that re-examination the remaining portions of my samples has proved the substantial accuracy of my certificates, it is clear there was no accidental mistake or transportation, and, as the estimation of lead in water is too simple a matter for an error of chemistry to occur, I presume that the amounts of lead found by Mr. Rimmington, the Somerset House chemists, and myself really represented the proportions of metal present in the various bottles examined by us. If this be the case, it is certainly rather startling to find that bottles of aerated water, from the same manufactory, and of presumably nearly contemporaneous manufacture, should be apt to contain amounts of lead varying so much as the figures of Mr. Rimmington and myself show; but the probable cause of the variation in the amount of lead will be evident to the readers of the *Analyst*. If we assume the 0.3 grain of lead per gallon found by the Somerset House chemists in their portion of one of the samples to represent the general extent of the contamination by lead, it is clear that the case was not one to be pooh-poohed or dismissed; for, although 0.3 grain per gallon may be within the limits of accidental impurity, people will generally object to be poisoned, even accidentally.

Another point worthy of notice in the examination of aerated waters for lead is the tendency of the contents of a bottle to become contaminated from contact with the leaden alloy which forms part of the stopper arrangement in a certain description of patent bottle. In a recent instance, I found 0.17 grain of lead in a sample of lemonade analyzed a few days after it was received; but, after standing some three weeks, with a leaden portion of the stopper immersed, the proportion of lead had increased to 3.36 grains of lead per gallon.

In all cases in which I test for lead in aerated waters, I am in the habit of confirming the result by the chromate test. When carefully managed, chromate of potassium will indicate any proportion of lead greater than one-third of a grain per gallon, without it being necessary to concentrate the water. The sample should be placed in a Nessler cylinder, and a drop of potassium-chromate solution added, in such a manner that the yellow solution gradually sinks through the clear and colorless liquid. The faintest cloud of lead chromate can thus be recognized. Addition of acetic acid seriously mars the delicacy of the test.

In testing aerated waters for lead with sulphuretted hydrogen, the possible presence of tin and copper must not be lost sight of. Copper, if present, may at once be recognized by the ferrocyanide reaction, but traces of tin are not readily identified. The plan I have found best is to precipitate 200 C.c. of the water with sulphuretted hydrogen, and dissolve the precipitate in strong hydrochloric acid. When the sulphuretted hydrogen is expelled, the solution is diluted somewhat, and boiled with metallic iron, to insure that the tin exists in a stannous condition. The liquor is then decanted from the undissolved iron and tested with mercuric chloride, when any formation of a silky-looking cloud of mercurous chloride will be readily recognized.

Although not closely connected with the detection of metals in aerated drinks, I may take this opportunity of calling attention to the fact that the ordinary test for zinc, with an alkaline sulphide, is far from delicate. A much more satisfactory test is one which I described, many years ago, in the *Chemical News*, vol. xxiii., page 290; but it has never found its

way into the text-books. The solution to be tested for zinc is rendered ammoniacal, heated to boiling, and potassium ferrocyanide added, when a white precipitate will be produced if the merest trace of zinc be present.—ALFRED H. ALLEN in *The Analyst*, 1884, 194.

TO REMOVE NOXIOUS VAPORS IN THE EVAPORATION OF CORROSIVE LIQUIDS.

In the chemical laboratory of Vassar College, a Richards aspirator with the necessary water supply and waste pipes is furnished to every student. It is used not only for rapid filtration, but in other processes wherever a current of air is needed. I have also applied it to the process of evaporation, first, for the purpose of carrying away the noxious vapors arising from corrosive liquids, and second, for evaporation in partial vacuo.

To fit the aspirator for general use, it is mounted upon one corner of the student's work-table in the manner shown in Figure 1. A small glass tube,

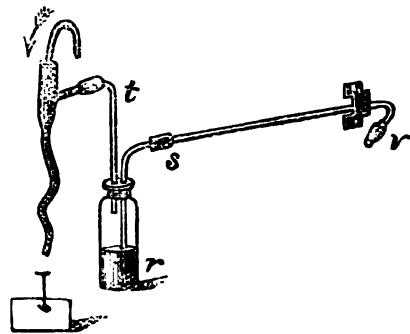


FIG. 1.

t , joined to the exhaust pipe by rubber tubing, passes through the airtight cork of an eight-ounce wide-mouthed bottle. A larger tube reaches nearly to the bottom of this bottle. The tube sv is a little smaller, and enters the end of this larger tube, while a piece of rubber tubing stretched over the junction makes a tight but flexible joint. The outer end at v has a rubber end stretched over it, by means of which connection is made with whatever apparatus is to be exhausted. Disconnection is made at this point, while the aspirator is still running, to prevent the water from the bottle r backing over into the vacuum which has been produced in the filter bottle or other vessel employed.

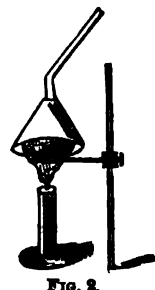


FIG. 2.



FIG. 3.

The Ventilating Funnel.—The stem, 6 or 8 inches long, of a glass funnel is bent at a right angle near the body. The end of the stem is thrust through the rubber tubing, and into the somewhat larger tube v . The evaporating dish is then brought up under the mouth of the funnel until the funnel rests upon it (Fig. 2). The aspirator is then started and the heat applied. The current of air flowing over the edge of the evaporating dish into the funnel carries the fumes with it to be condensed in the reservoir bottle v , or off with the stream of water into the sink. The edge of the funnel may rest *inside* the evaporating dish with the same result. The same funnel is thus used with dishes of varying diameter. Two sizes are at present in use; one of 3 inches

diameter for evaporating dishes, another of 1½ inches for crucibles. The evaporation of acids to dryness is conducted on the open tables without annoyance from their fumes, by means of this simple artifice.

The Flask.—Let the cork of the flask be pierced with two holes, one for a bent tube to enter the aspirator tube *v*, the other for a straight tube which may be adjusted so that its lower end will be little above the liquid within. A current of air will then pass through the straight tube, over the surface of the corrosive liquid in the flask and sweep its fumes away into the waste.

To evaporate in partial vacuo, provide the flask with a cork carrying the bent tube only. No air can enter, and the aspirator will then create a vacuum, to a degree depending on the heat of water at command.—LE R. C. COOLEY in *Amer. Chem. Jour.*

Color Reactions of Antipyrin and other Antipyretics and Antiseptics.

THE most characteristic reactions for distinguishing between the more important antipyretics are those produced by ferric chloride, nitrous and fuming nitric acid. In the following table the reactions are given, which are produced by adding the reagents to 2 cubic centimeters of a solution of the several substances of 1 in 1,000.

On Quinine and Homoquinine.

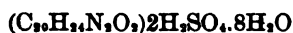
(Abstract of a paper by O. Hesse in *Liebigs Annalen d. Chem.*, 225, 95.)

THE question formerly often agitated, whether quinine occurs in other barks outside of those derived from species of *Cinchona*, was answered by Hesse affirmatively already in 1871, when he showed that a peculiar new kind of supposed cinchona bark, now known as cuprea bark, at that time first appearing in commerce, and which we now know to be derived from *Remijia pedunculata*, actually contained this alkaloid. Though others have claimed the priority of this discovery—J. E. Howard asserting that he had noticed this bark already in 1857, and had found it to contain quinine—yet nothing had been published on the subject. And since Howard, in Nov., 1869, reasserted that the cinchona alkaloids are exclusively confined to the species *Cinchona*, it seems allowable to presume (says Mr. Hesse) that Howard's attention was first drawn to the presence of quinine in the above-mentioned bark through Hesse's discovery, privately communicated to him by Flückiger.

Much more important is the question whether the alkaloid at that time extracted from the bark, and assumed to be quinine, was in reality the latter or a similar alkaloid, viz., homoquinine. A renewed examination by Hesse has shown that the quinine then obtained was really quinine, and not the other alkaloid.

The constant occurrence of quinine in cuprea bark, and the regular absence of cinchonidine, have induced several writers to propound the theory that the plant itself, during its development, may be able to convert one alkaloid into the other. This is refuted by Hesse, who says he is able to recognize the most minute traces of cinchonidine alongside of quinine, by pointing out the fact that he has never been able to observe any, and that if there were any cinchonidine present in the bark at some stage of its development, there must occur some time or other a lot in the market containing at least traces of it.

The cinchonidine being absent, it is very easy to prepare the sulphate of quinine from cuprea bark. The latter, when uneffloresced, has the composition:



Concerning the water of crystallization of the official sulphate of quinine, Mr. Hesse says:

"Referring to Flückiger's statement in his work, *Die Chinarinden*, etc., 1883, p. 55, 'that it is not settled whether this salt contained 7 or 8, or an intermediate number of molecules of water of crystallization,' I may be permitted to state that Jobst and myself have already, twenty years ago, proved the formula for the salt, with 7 molecules of water, to be incorrect. It is not quite so easy, however, to decide whether the salt contains 7½ or 8 molecules. Yet a series of experiments performed with all the care due to the subject, has shown me that the pure uneffloresced sulphate actually contains 8 molecules of water of crystallization, and that, therefore, Robiquet's formula, announced some fifty years ago, is correct. It is true that the salt in question, in commerce, usually contains less than 8 molecules of water, which is due to the fact that it is almost impossible, when working on a large scale, to completely prevent efflorescence. Some manufacturers make it a point to advertise that their product contains a less quantity of water (f. i., 14.4%); but here it should not be forgotten that the commercial sulphate of quinine sometimes contains considerable quantities of sulphate of cinchonidine, which may likewise be the cause of a smaller percentage of water.

Homoquinine.

The presence, in cuprea bark, of a peculiar alkaloid greatly resembling quinine was announced simultaneously (Dec. 1881) by D. Howard and Hodgkin, Paul and Cowley, and G. Whiffen. The first mentioned chemists named it *homoquinine*, Whiffen *ultraquinine*. Cupreine was also proposed as a name. But this very alkaloid had been observed by one of Hesse's colleagues, Mr. J. A. Tod, already a year previously, mistaking it first for cinchonidine until June, 1881, when he recognized the error. Tod found this alkaloid first in a few isolated bales of cuprea bark in September, 1880; it was not until May, 1881, that its occurrence in the bark became general. In many cases, the latter contained of it about 0.3%, sometimes as much 0.5 to 0.6%. Wood and Barret afterwards announced that they had looked for this alkaloid in several hundred samples of the bark, and could not find it; hence they concluded that the other authorities had mistaken a peculiar compound of quinine and quinidine for a special alkaloid, and they fur-

homoquinine is best separated from such a mixture by dissolving in diluted sulphuric acid, precipitating the bases by ammonia, and at once agitating with ether which, shortly afterwards, separates the homoquinine in crystals. These are freed as much as possible from the ethereal mother-liquid, again dissolved in diluted sulphuric acid, again precipitated with ammonia, and shaken out with ether, whereupon the base soon separates again in crystals. This manipulation is repeated if necessary.

Hesse finds that homoquinine, to which he formerly assigned the formula $C_{20}H_{24}N_2O_8$, has in reality the same composition as quinine: $C_{20}H_{24}N_2O_8$. From water-washed ether it separates in groups of needles belonging to the rhombic system or as a sandy powder (when the solution is disturbed), or as a mass of fine scales. In all these cases, it contains from 2 to 2½ molecules of water of crystallization. On exposure to air, the crystals gradually effloresce, though the more compact ones always retain at least 10%. Such crystals may be exposed at once to a temperature of 100° C., without having to risk their melting, as would be the case with the crystals of terhydrated quinine. The crystals of homoquinine melt at near 177° C.

Homoquinine is more difficultly soluble in ether than quinine; on evaporating its ethereal solution, the latter does not gelatinize, but crystallize to the last drop, provided the ether was absolutely free from alcohol. It is easily soluble in chloroform, more difficultly in benzol, and very little in beuzin.

Alcohol dissolves it easily, and, on evaporation, leaves it behind in an amorphous state.

Its solution in diluted sulphuric acid shows a blue fluorescence, removed by chlorides or other haloid salts. Hydrochloric acid, likewise, removes the fluorescence. The solutions are lævogyre and also give the green thalleio-quinine reaction.

With acids it forms neutral and acid salts which differ from those of quinine only in form and partly by greater solubility. In other respects, particularly in its behavior to polarized light, it is identical with quinine.

Conversion of Homoquinine into Quinine.

One very remarkable observation was made by Mr. Hesse, namely, that homoquinine could be converted into quinine under certain circumstances. After a series of trials, Hesse found that on precipitating the alkaloid by

2 C.c. of Solution 1:1,000.	Addition of 1 drop ferric chloride.	Followed by 1 drop conc. sulphuric ac.	Addition of 1 drop nitrous (or fum. nitric) acid.
Carbolic Acid...	Blue.....	Yellowish-black..	Dirty brownish-violet.
Salicylic Acid...	Violet-blue.....	Colorless.....	Faintly yellowish-brown
Resorcin.....	Blue.....	Yellowish-brown..	Dark-red, in the cold.
Kairin.....	Light-brown, then dirty dark-brown.	Purple.....	Orange-red, in the cold.
Antipyrin.....	Reddish-brown.....	Colorless.....	Green.
Quinine.....	Colorless.....	Colorless.....	Colorless.

DR. O. SCHWEISSINGER in *Arch. d. Pharm.*

ther gave a process for producing such a compound of quinine and quinidine. It has, however, been proved that cuprea bark contains no quinidine at all; consequently Wood and Barret's theory has no ground to stand upon.

All chemists who had asserted the existence of homoquinine agreed in this, that this alkaloid yields, with sulphuric acid, a neutral sulphate rather difficultly soluble in cold water. Hence it will usually accompany the sulphate of quinine prepared from the bark unless it has been changed or removed during the manufacture.

According to Hesse's experience,

soda solution, instead of by ammonia, a certain quantity of quinine was produced. And by repeated precipitation with soda, shaking out with ether, and dissolving in diluted sulphuric acid, he succeeded in converting homoquinine entirely into quinine. If the base be warmed with the soda solution, the conversion will be hastened very materially.

[Subsequently to the publication of this paper, Messrs. Paul and Cowley published a paper in *Pharm. Journ.* [3], xv., 221, in which they reported that homoquinine is converted by contact with certain substances, into qui-

nine and some other alkaloid. This fact has been confirmed not only by further researches of the authors, published in *Pharm. Journ.* of Nov. 22d, 1884, but also by Dr. Hesse himself, as is stated in the paper of Messrs. Paul and Cownley. These chemists also showed that homoquinine cannot be regarded as a mechanical mixture of quinine and the new alkaloid, *cupreine*, but must be a distinct chemical individual itself.—Ed. A. D.]

Coating Glass with Mercury.—Spread a sheet of tin-foil evenly upon a flat stone table and cover it uniformly to the depth of $\frac{1}{4}$ inch with clean mercury. A plate of perfectly clear glass is floated on the mercury, care being taken that all bubbles of air are excluded. It is then pressed down by loading it with enough weights to press out all the mercury which remains fluid. The glass is allowed to remain in this condition for about twenty-four hours, when it is raised carefully upon its edge and allowed to remain for some days in that position. To silver convex or concave mirrors with amalgam requires a mould, usually made of plaster of Paris.—*Scient. Am.*

To Remove Tarnish and Rust from Nickel-plated Ware.—To remove rust from nickel-plated ware without removing the plating, rouge is recommended, which should be applied with chamois skin. A very little oil may be used with the rouge, and the parts may then be wiped with a slightly oily rag. The wiping and polishing must be frequently repeated. Or, take equal parts of precipitated carbonate of iron and prepared chalk, or else take 1 part of mercury with chalk and 4 parts of prepared chalk, and mix them intimately. For use, apply a small quantity with alcohol, and rub with chamois leather.—*Scient. Am.*

Mending Mortars and Pestles.—Melt together equal parts of gutta-percha and shellac, in an iron vessel, on the sand-bath; apply a thin coat of the mass upon the strongly heated fractured surface; press forcibly together, and allow to cool, giving the article a suitable position.—*Rundschau* (Leitmeritz).

Black Varnish.—Dissolve 50 parts of powdered copal in 400 parts of oil of lavender by the aid of a gentle heat, then add 5 parts of lamp-black and 1 part of powdered indigo.—*Scient. Am.*

To Remove Rust from Iron Articles, Such as Tacks, Nails, etc.—Put the articles into a wire-cloth basket, dip it in dilute sulphuric acid for a very short time, then quickly plunge into boiling water, and next into boiling hot lime-water. Finally throw the articles upon a wire-cloth over a fire to dry quickly.—*Scient. Am.*

When lime-water, saturated in the cold, is heated, it becomes opalescent, as the lime is much less soluble in hot than in cold water. [See last number, page 14, Ed. A. D.]

Remedy for Warts.—The following is recommended in the *Journal de Thérapeutique*:

Iodine.....12 parts.
Carbolic acid, cryst..48 "
Alcohol.....5 "
It is best applied by means of a glass rod.

Syrup of Tolu.—Rother prepares first a concentrated glycerite of balsam of Tolu, which yields a clear mixture when mixed with 15 parts of simple syrup. The glycerite is prepared by gently warming 1 part of balsam of Tolu with two parts of solution of potassa and 8 parts of water, until dissolved, then adding 12 parts of glycerin and concentrating the whole to 6 parts.—*New Idea.*

When this solution is kept for some time, a little alcohol may evaporate and render it turbid and less active owing to the separation of some cocaine. In such a case, the addition of a few drops of alcohol will immediately redissolve the precipitate.—*Pharm. Post.*

Test for Cyanogen.—Cyanogen may be detected by passing a current of vapor containing the cyanide in a volatilized or gaseous condition through strong solution of soda, and then adding to the latter some previously neutralized picric acid, whereby very deep red color is immediately produced. Vogl has succeeded in finding cyanogen in the smoke of tobacco and in illuminating gas, by means of this method.—*Sitzb. Akad. München und Rundschau.*

Preparation of Pure Egg-Albumen.—According to Ruckert, this may be obtained by adding an equal volume of carbonated water to an aqueous solution of albumen deprived of the membranes (by beating). The copious, flocculent precipitate is filtered off, and the filtrate dried at 40° C. (104° F.).—*Chem. Zeit.*

Blaud's Pills.—Dr. Adolph Tscheppé criticises the formula for Blaud's pills usually followed, viz.:

Sulphate of Iron.....gr. 240
Carbonate of Potassium gr. 240
Make 96 pills.

While pills made from Vallet's mass generally keep well, Blaud's pills made extempore by apothecaries, easily oxidize and become rusty. The principal reason of this is their great porosity, when prepared in the usual manner. The best way to avoid this is to rub the crystallized sulphate of iron and the carbonate of potassium in the mortar without water, until the mass begins to become liquid, when a little sugar, and afterwards powdered gum arabic are added in order to envelop the ferrous carbonate. For the quantity above-mentioned 20 to 30 grains of sugar are sufficient. Without the addition of water, the mass is the more fluid the more perfectly the iron salt (which contains much water of crystallization) has been decomposed, which is accomplished by assiduous trituration. Indeed, the mass is too liquid to be formed into pills, but it acquires the proper consistence in a short time, and remains plastic for a long while. Such pills remain green.

The proportion of the ingredients, however, is capable of improvement, inasmuch as the water of crystallization of the iron salt was evidently not taken into consideration when the quantities were adjusted. In view of the fact that it contains 7 molecules of water, and that the carbonate of potassium of the market usually contains between 10 and 13 per cent, the proper proportions should be:

Sulphate of Iron.....gr. 240
Carbonate of Potassium (87%) gr. 135.5

Pills prepared with these proportions, after the method above given, will be found satisfactory pharmaceutically. The excess of alkali being the cause of the easy deterioration of the pills, no objection can be raised against the proposed modification.—After *Pharm. Rundschau.*

Gelatinized Benzin.—A gelatinous mixture containing benzin may be obtained as follows:

Dissolve 120 parts of white (Castile) soap in 180 parts of hot water, add to the solution 30 parts of concentrated water of ammonia, dilute with water to 750 parts, and then add enough benzin to make 1,000 parts, and shake. In this form, the benzin is less volatile than it otherwise would be; besides, the soap and ammonia increase the detergent and cleansing power of the benzin.—After *Rundschau.*

Camphor Ice.—T. H. Hazard recommends the following formula for camphor ice:

Wax.....16 oz.
Spermaceti.....16 "
Oil of sweet Almonds 16 fl.oz.
Glycerin..... $\frac{1}{4}$ fl.oz.
Camphor.....3 oz.
Mix.—*Weekly Drug News.*

Bay Rum.—L. H. Thompson gives the following:

Oil of Bay.....1 fl. oz.
Acetic Ether.....1 "
Oil of Pimenta..... $\frac{1}{4}$ "
Alcohol.....1 $\frac{1}{2}$ gall.
Water.....1 $\frac{1}{2}$ "
Borax.....1 oz.

The borax is first dissolved in water and the solution filtered. It is said by the author to give the desired color.—*Weekly Drug News.*

Tielemann's Cholera-Drops.

Wine of Ipecac.....2 parts.
Spirit of Peppermint..2 "
Tincture of Opium and
Saffron (Tinct. Opii
crocata, Germ. Ph.)..1 "
Ethereal Tincture of
Valerian (Germ. Ph.)..4 "

Vigier's Mouth-wash or Dental Mixture.

	Gm.		
Oil of Peppermint, Engl.	20	300 gr.	
" " Anise, French.....	8	120 "	
" " Staranise.....	8	120 "	
" " Ceylon Cinnamon.....	2	30 "	
Oil of Rose.....	1	15 "	
" " Cloves.....	4	60 "	
Tinct. of Ambergris.....	4	60 "	
" " Vanilla.....	20	300 "	
" " Cochineal.....	50	750 "	
" " Logwood.....	4	60 "	
" " Orris Root.....	6	90 "	
Powdered Sugar.....	20	300 "	
Alcohol, 90%.....	2 litres	67 $\frac{1}{2}$ fl. oz.	

[Note.—Tincture of ambergris is made by macerating 1 part each of ambergris and musk in 70 parts of Hoffmann's anodyne. The tincture of vanilla intended by the author is made by macerating 1 part of vanilla in 10 parts of 80% alcohol. Tincture of cochineal, logwood, and orris root are made from one part of drug and 50 parts of 60% alcohol. In place of the two first-named oils, the best American oil of peppermint and Saxony oil of anise may be used.—Ed. A. D.]

Holloway's Pills.
THEIR composition is given as follows:

	Parts.
Aloes.....	200
Rhubarb.....	40
Black Pepper.....	18
Saffron.....	10
Sulphate of Sodium.....	10

Chartreuse.

1. *Yellow Chartreuse* may be prepared from:

	Parts.
Oil of Angelica.....	20
" " Cajuput.....	3
" " Calamus.....	1
" " Cloves.....	2
" " Coriander.....	2
" " Hyssop.....	3
" " Mace.....	4
" " Melissa.....	3
Sugar.....	1,200
Alcohol, 95%.....	3,000
Distilled Water.....	1,800
Tinct. Saffron.....	q. s.

2. *Green Chartreuse* is made like the above, except that only 900 parts of sugar are taken, and enough indigo solution added to produce a yellowish-green tint.

3. *White Chartreuse* contains no coloring matter, and only 600 parts of sugar in 6,000.—J. PROCHÁZKA in *Pharm. Zeit.*

Titration of Sulphurous Acid and its Salts.

FORMERLY it was assumed that an aqueous solution of sulphurous acid, could be titrated with litmus exactly as the strong mineral acids are; that is, that the change of color takes place when two molecules of sodium hydroxide have been added to one molecule sulphurous acid. This, however, is not the case, as NaHSO_3 is neutral to litmus. Litmus has been recently replaced in many cases by methyl-orange, which presents greater advantages for titrating carbonates or sulphites. The orange cannot, however, be employed with organic acids.

Thomson's experiments (*Chem. News*, 47, 136) having brought forward the important fact that the salts of sulphurous acid present have different kinds of neutrality towards indicators, the author repeated his experiments in order to confirm Thomson's results; in the course of this investigation, the author made a series of interesting experiments on the titration of bisulphites, and of free sulphurous acid. He concludes that litmus and phenacetolin should be entirely rejected for the titration of sulphurous acid, for totally different results are obtained according as the change of color is taken at a decided blue, or a decided red. Methyl-orange, phenolphthalein, and rosolic acid, on the contrary, are all equally well serviceable; in the case of the orange, however, it must be noted that one molecule SO_2 is saturated by one molecule KHO , and in the case of phenolphthalein and rosolic acid, by only half a molecule, i. e., one equivalent of SO_2 to one of KHO . A further confirmation of these results was obtained by some experiments with sulphites.

The novelty of the author's experiments is the abnormal behavior of litmus and phenolphthalein.—G. LUNGE, *Dingl. Pol. J. and J. Chem. Soc.*

Testing Menthol.—Prof. Eykman, of Tokio, recommends the following method for detecting thymol in menthol.

Dissolve a little of the suspected menthol in 1 C.c. of glacial acetic acid, and add 5 to 6 drops of concentrated sulphuric acid. On now adding one drop of nitric acid [at first a greenish, then—Ed. A. D.] a fine blue color will make its appearance (if thymol was present) in the lower part of the test-tube, which will spread throughout the contents of the latter on shaking. If only a small amount of thymol is present, the color will be dichroic, red by transmitted, and blue by reflected light. If phenol is present, a pure violet color only is produced. Salicylic acid, camphol, and borneol yield no color reaction under these circumstances.—*Pharm. Zeit.*

Cement which resists Heat and Acids.

THIS cement consists of a 100 parts of sulphur, 2 parts of tallow, 2 parts of rosin, and a certain quantity of finely powdered and sieved glass. The sulphur, tallow, and rosin are melted together, until the mass has acquired a syrupy consistence with a brown color; enough powdered glass is then added, until the mass forms a soft dough. The articles to be cemented must first be warmed and the cement must be also applied warm.—*Chem. Zeit.*

Salicylate of Sodium has had excellent results for the employment of gramme (15 grain) doses of the salt, given in lemon juice, in a case of obstinate malarial fever of quotidian type, after failure in the use of arsenic and cinchona salts in large doses. One daily dose was administered about an hour before the paroxysm was expected.—*Allgem. Med. Central-Zeit.*

Testing Red Wine for Red Aniline Colors.

So long as the ordinary fuchsin (hydrochlorate of rosanilin) was alone employed as coloring matter for the purpose of imitating genuine red wines, the process of Falières was sufficient to recognize the sophistication. This consists in shaking 100 C.c. of the wine with ether both before and after supersaturation with ammonia. The ethereal liquid, when evaporated in a porcelain capsule with a slight excess of acetic acid and some fibres of uncolored silk, should not impart a crimson or violet color to the latter.

This process has also been adopted as one of the tests for the purity of red wine in the U. S. Pharmacopœia.

C. H. Wolff has lately pointed out that this process is entirely useless in the case of red wines which have been colored with the so-called *acid fuchsin* or *fuchsin S* (sodium rosanilin-sulphonate), as this coloring matter, when shaken with ether either in acid or in alkaline solution is insoluble therein. R. Kayer was the first (1881) who drew attention to the use of this coloring matter, as being more uniform in composition and having a much more natural wine-color.

"Fuchsin S" is not precipitated by basic acetate of lead; the solution, acidulated with acetic acid and shaken with amyl alcohol, yields to the latter a red color, which when examined (in this solution) by the spectroscope, is found to give the absorption spectrum of fuchsin.—*Pharm. Centralh.*

The Manufacture of Oxygen.

THE production of oxygen direct from the air has long been aimed at by chemists. It would appear, from a communication made to *La Nature* by Messrs. Brinfrères, that this purpose has been successfully accomplished. They have erected a plant which produces 100 cubic meters per day—a quantity which is far beyond merely laboratory experiments. Their process is based on the property possessed by caustic barytes of absorbing oxygen. A series of retorts is fixed in a furnace, and caustic barytes is inserted in each retort. A force-pump and a suction-pump are connected with each retort, and at a temperature of between 500° to 600° C. air is pumped into the retorts. The air has previously been in a chamber containing lime and caustic soda to free it from carbonic acid gas. At the temperature named the barytes absorbs oxygen. At about 800° the resulting peroxide is deoxidized, and, by means of the suction-pump, the oxygen is drawn off. By this process a perfectly pure gas can be obtained in unlimited quantities. The oxidation and deoxidation of the barytes can be repeated indefinitely.

Of course it produces nitrogen as well as oxygen, and the authors believe the manufacture of ammonia by direct combination with hydrogen will be possible. The applications of oxygen are likely to be very numerous. The authors think it will be found superior to carbonic acid gas in aerated beverages. For all antiseptic purposes oxygen is of great value, and it is likely to be extensively employed in metallurgical processes, as in its medium elevated temperatures are more readily obtained than in the atmosphere.—*Chem. and Drugg.*

A New Alcoholic Ferment.

AT Busalla, in the north of Italy, there is a small brewery which has gained a considerable reputation for its beers brewed on the low fermentation system. Last season these beers were very inferior, and without any apparent reason. A local chemist, M.

Mendes, was called to investigate the matter, and the result of his researches was the discovery of what is believed to be a new form of ferment. Among the cells of ordinary *Saccharomyces cerevisiae* were some of *Saccharomyces Pastorianus*, and some other cells very much smaller in size. These latter were isolated and cultivated by themselves, and were then found to be almost spherical in shape, and from $\frac{1}{10}$ to $\frac{1}{15}$ of a millimeter in diameter. The shape, size, and general appearance of the cells of this ferment were found to be very constant, and they very closely resembled those represented on the right hand of the Plate iii. in Pasteur's "Études de la Bière." So far there would be nothing very remarkable in the identification of a new form of ferment, but M. Mendes, by some carefully conducted experiments, has proved that this ferment is altogether without action on cane-sugar. It is generally admitted that ordinary yeast is not capable of directing fermenting cane-sugar, but that it first exerts an inversive action on cane-sugar, and, after this inversion, fermentation takes place. Now the peculiarity of the new ferment discovered by M. Mendes is not that it will not ferment cane-sugar, but that it will not invert it. Experiments were made with this new ferment on impure cane-sugar solutions, and the result was said to be that the glucose and invert sugar was fermented by it, but the cane-sugar was left untouched. The practical importance of this discovery to sugar-refiners must, therefore, be very great, and it is at the same time of very considerable interest to brewers. We propose to refer to it in greater detail on a future occasion.—*Scient. Amer.*

Blackberry Leaves vs. Tea Leaves.

ACCORDING to Dr. Otto Kunze (in *Zeitsch. f. landwirthsch. Gewerbe*, 1884, No. 15, p. 115) young blackberry leaves have exactly the same taste as genuine, good, Chinese tea leaves. Regarding the principle theine, the author thinks that it plays only a neutral or indifferent part so far as the effects of the use of tea is concerned. [This supposition is, of course, directly opposed to the views held by all authorities.] The author, therefore, recommends blackberry leaves as a perfect substitute for genuine tea.

Note.—This having been publicly announced, it will be advisable to be on the lookout for the sophistication.—Ed. A. D.

Cork Bricks.

ACCORDING to *Annales industrielles*, cork bricks, which are now being employed for various purposes, such as for coating steam boilers and ice cellars, and for many other purposes, are thus made: The cork is freed from woody particles and other impurities by a winnowing process; the wind from the ventilator throws the cork into a second machine, where it is cut to pieces, and is thence drawn up in buckets and ejected into a mill, where it is ground to an impalpable powder, which is then kneaded up with a suitable cement, and pressed into bricks. The cork bricks are first dried in the air, and afterwards by means of artificial heat. They are hard, and not liable to decomposition, and keep off moisture, heat, cold, and sound.—*Chem. and Drugg.*

Nitrate of Sodium has been found by Dr. Lubinski to be a useful substitute for nitro-glycerin in disease of the aortic valves attended with want of blood in the brain or with angina pectoris. He gives a grain dissolved in a teaspoonful of water, four times daily. The salt is extremely liable to decomposition, and hence its frequent failure to produce good results.

"Heliotrope."

	Parts.
Heliotropin	50
Oil of Neroli	1
Tinct. of Musk	10
Alcohol	5,000

Note.—Heliotropin is an artificial substance prepared from pepper, otherwise known as piperonal, and has the odor of heliotrope.

"Ague Remedy."

MR. C. S. HALLBERG recommends the following formula for the preparation of a "popular" ague remedy:

Tr. Eucalypt	f 3 2
" Serpentariae	f 3 4
" Capsici	f 3 5
" Myrrhæ	f 3 5
" Nucis Vom	f 3 2
Quinine Sulph.	gr. 60
Extr. Glycyrrh., q. s. ad	f 3 16

An Agreeable Quinine Mixture for Children.

Quinine Sulph.	gr. 11
Acid Tannic.	gr. 20
Tr. Opii Camph.	f 3 1
Tr. Cinchonæ	f 3 1
Spir. Lavandulæ Co.	3 3
Syrupi, q. s. ad	f 3 4

M. Shake before using. Dose according to quantity of quinine intended to be given—average about one teaspoonful. The quinine and tannic acid must be well triturated together to obtain a handsome-looking mixture. —After *Canada Lancet*.

Vienna Stomach Bitters.

	Parts.
Sassafras	200
Chamomile	100
Cloves	100
Cubebs	25
Coriander	10
Quassia	10
Nux vomica	20
Red Wine	4,000
Digest [for two weeks]; then add	
Glycerin	150

—*Rundschau (Leitmeritz)*.

The Strength of Aqueous Sulphurous Acid.

THE last U. S. Pharm. requires that aqueous sulphurous acid should have the spec. grav. 1.022 at 15° C. and should contain 4% of the gas, while the pharm. of 1870 required about double of this strength. Some doubt having arisen about the object the revisers had in view when making the change, and several criticisms of the alteration having appeared in public, Mr. Carl Riebe of Chicago investigated the subject, and reported the results at the last meeting of the Michigan Pharm. Association. At the close of his paper he sums up his results as follows:

1. Water will not, at a medium temperature (of about 17.5° C. equal 63° to 64° F.) retain more than 9 per cent of sulphurous acid gas.
2. The solution can be brought to the strength of 8 per cent by following the process of the U. S. Ph. of 1870, but it will after a short time come down to 7 per cent.
3. The strength best suited for pharmaceutical and technical purposes is 6.5 per cent, or sp. gr. 1.034, since it will keep for a long time by following the directions laid down in the Pharm. of 1870, for preservation, and can be shipped without any risk of loss.
4. Sulphuric acid will always be present, though in so small an amount that it will not interfere with the medicinal value of the preparation. By adding some barium sulphite, and macerating for a day or two, the sulphuric acid of an old sample can be removed.—*The Druggist*.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,407.—Black Color for Fats (M.).

Probably the best method for imparting a black color to fats such as stearin, lard, and even mineral fats like paraffin, ceresin, etc., is one lately recommended in the *Chemiker Zeitung* (1884, 468). This consists in heating the fat with one-quarter or one-fifth of its weight of fine-cut oriental cashew nuts (from *Anacardium orientale*), by means of superheated steam, or in an oil-bath, to a temperature of between 100 and 220° C. [we think the former figure should read 200.—Ed. A. D.]

The mass is then allowed to cool to between 100° and 90° C. and strained. The required temperature varies according to the substance: in the case of paraffin, ceresin, and stearin, it should not exceed 220° [the original again says: 100° to 220°]; in the case of wax 120°; and with resin, 150°. The proportion of coloring matter may be varied, and also the temperature, whereby different tints of color may be produced (bluish-black to deep-black). Occidental cashew nuts (from *Anacardium occidentale*) may also be used according to Perrutz (in *Der Seifenfabrikant*). In place of the nuts, the extracts prepared from them may be used, but they must be preserved so as not to be exposed to light. The best effect is said to be produced by freshly dried cashew nuts.

No. 1,408.—The Purity of Cod-Liver Oil (M. S. W.).

On page 217 of our last volume we gave an abstract of a recent investigation by Kremel, who examined the different tests proposed for ascertaining the purity of cod-liver oil, and who proposed a new test, which is as follows:

Ten to fifteen drops of the oil are poured on a watch-glass, and two or three drops of fuming nitric acid (spec. gr. 1.500) are slowly allowed to run in at the side. Genuine cod-liver oil then turns red at the point of contact. When afterwards stirred with a glass rod it becomes fiery rose-red, soon passing into pure lemon-yellow.

This test is chiefly useful to distinguish genuine cod-liver oil from other oils, which are often substituted for it in some countries. For instance, coal-fish oil (from *Gadus Carbonarius*), when treated in the same manner, turns intensely blue at the point of contact; when stirred, it becomes brown and remains so for two or three hours, when it finally passes likewise into a more or less pure yellow. Japanese cod-liver oil behaves like the preceding, except that red streaks are sometimes observed along with the blue ones, on the addition of nitric acid. All the preceding oils also yield the well-known color for biliary acids, by means of sulphuric acid. Seal oil, treated as above stated, at first shows no change of color, and becomes brown only after some time. As this oil is not a liver oil, it cannot give the reactions for biliary acids.

No. 1,409.—Antipyrin (Dr. O.).

This new antipyretic remedy—of which we have given various information in our last issues—has been used to some extent hypodermically, but the majority of observers report that its use, in this form, is frequently accompanied by very annoying local inflammation and sores. It will, therefore, be advisable to administer it only internally.

No. 1,410.—Chlorate of Potassium (Subscriber).

The most recent exposition of our knowledge of the physiological effects (including therapeutics and toxicology) of chlorate of potassium will be found, in a condensed form, in the latest editions of the U. S. and National Dispensatories, and in the recent editions of Bartholow's and H. C. Wood's "Handbooks of Therapeutics." A comprehensive work on the subject is: Mering, J., "Das chloresaurer Kali, seine physiologischen, toxischen und therapeutischen Wirkungen," Berlin, 1885, 8vo (III., 142 pp.).

No. 1,411.—Nitroglycerin (Dayton).

The best work on the manufacture of nitroglycerin and explosive compounds containing the same, so far as we know, is: Eissler (W.), "The modern high Explosives, Nitroglycerin, Dynamite, etc." (Illustr.) 8vo, New York, 1884.

It will neither pay you, nor will it be safe for you personally—letting alone the question of invalidating your insurance—to prepare the small amount required for making a 5% or 1% alcoholic solution for medicinal purposes. The best way for you will be to make an arrangement with some reliable manufacturer to prepare the solution at his works and to ship it to you in its diluted state.

No. 1,412.—Color Test for Atropine (J.).

Gerrard proposed the following test: Add to a very small quantity, say $\frac{1}{2}$ to 1 milligramme, of the suspected alkaloid or the alkaloidal substance obtained from complex mixtures, 2 cubic centimeters of a 5% solution of corrosive sublimate in 50% alcohol, and warm very gently. If atropine was present, a red (or yellowish-red) precipitate will be produced. Hyoscyamine might under certain conditions be mistaken for atropine, while this test is applied, but from the following it will be seen that they may be clearly distinguished. If 1 milligramme of hyoscyamine is treated with 2 C.c. of the above reagent, the red precipitate does not make its appearance, either immediately on warming, or after standing for hours. But, if only one to two drops of the reagent are added to the hyoscyamine, a short warning produces the same red precipitate as in the case with atropine. Gerrard's test is, of course, useless when inorganic alkalies are present, since they produce the same kind of precipitate. And finally it should be stated that the above reaction occurs only in solution of the alkaloids themselves, and not in that of their salts.

No. 1,413.—To clean Vessels which have contained Petroleum (U.)

Casks, glass vessels, cans, and other receptacles which have contained petroleum, are best cleaned by means of quicklime. Casks are best cleaned, according to Lerch, by filling them full of water, and then putting in each one pound of quicklime. The latter becomes rapidly hydrated (slaked), the mixture is frequently stirred, and the walls of the cask (if the head is out) rubbed with the mixture. Any adhering petroleum will then easily detach itself from the sides, and the odor will gradually diminish. Glass vessels are cleaned by pouring into them 2 to 4 oz. of thin milk of lime,

and shaking well for about 10 minutes. The outer surface of the vessel is likewise rubbed off with a rag dipped into the milk of lime. Obstinate adhering crusts, inside of the vessel, are removed by adding pebbles or other similar material before shaking with the lime-water.—*Indust. Bl.*

No. 1,414.—Peppermint (C. A. D.).

Your inquiry could not be answered by us at once, because we endeavored to obtain some information on that subject ourselves, for your benefit. We find, however, that a secondary channel is not satisfactory. Our advice to you is to apply with your request to Mr. W. T. Thiselton Dyer, F.R.S., etc., Assistant Director of the Royal Gardens, Kew, in order to ensure getting the true variety. For the commercial aspect of the question we refer you to Burroughs, Welcome & Co., Snowhill, London, who would no doubt be able to furnish you both the information and the article.

Regarding the manufacture of peppermint, we can only say that the maker, Mr. Albert M. Todd, of Nottowa, Mich., an extensive grower of peppermint and distiller of peppermint oil, has never given his process to the public, and we are therefore unable to answer. But we presume that by a judicious reduction of temperature and other means employed in the case of other essential oils containing stearoptens, the peppermint camphor (menthol) is separated without much difficulty.

The Japanese plant you may be able to obtain through the agency of some special correspondent in Japan. Possibly you might interest the State Department at Washington in the matter, and specimens might be asked for officially, for your benefit (and at your expense of expressage, very likely). This has been repeatedly done for the purpose of fostering home enterprise.

No. 1,415.—Florida Water (T. S. N.).

Lanman and Kemp's Florida Water is prepared by a process only known to the manufacturers, and it is out of our power to give you the formula.

A formula on our files is as follows:

Oil of Lavender.....4 fl. oz.
" " Bergamot.....4 " "
" " Neroli.....2 fl. dr.
" " Orange.....4 " "
" " Cloves.....1 " "

Grain Musk.....4 grains.

Deodorized Alcohol...1 gallon.

Tincture of Tonka.... enough
to color.

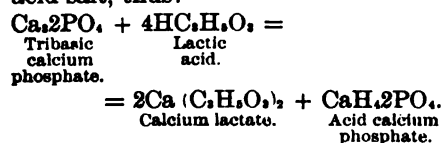
Macerate for fifteen days, and filter.

No. 1,416.—Mixing Machine (Que-ry).

A very superior mixing machine, which will probably suit your purposes best, is that made by the Hunter Sifter Manufacturing Co. You will find an illustration of this on page 52 (adv.) of our last December number.

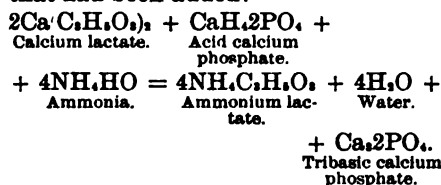
No. 1,417.—Chemistry of the Lactophosphates (H. S.).

The solution of tribasic phosphate of calcium in any acid capable of dissolving it, brings about the formation of a soluble calcium salt with which the whole of the new acid is combined. The calcium requisite for this is abstracted from the tribasic phosphate, and this is thereby converted into an acid salt, thus:



The acid phosphate of calcium is soluble in water, so is the lactate; hence the mixture is rendered clear. The same reaction takes place with hydrochloric, nitric, and other acids

capable of forming soluble salts with calcium. From such a solution, ammonia precipitates the whole of the calcium and phosphoric acid in the form of tribasic phosphate, as it was originally; the ammonia acts merely by combining with the foreign acid that had been added:



The above explanation, applied to the formula of the U. S. Ph. for *Syrupus Calcii Lactophosphatis*, shows that the phosphate of calcium passes through both of the above reactions, only that hydrochloric acid is used in the first operation instead of lactic. When the freshly precipitated phosphate is now treated with the lactic acid, the first of the above reactions takes place. Twenty-two parts of tribasic phosphate of calcium require, theoretically, 33.97 parts of lactic acid containing 75% of pure acid. But when the formula was tried, in the Committee on Revision, it was found that 33 parts of the commercial acid were always sufficient to produce solution, the acid being a little over 75%.

A soluble, solid lactophosphate of calcium results, if the clear liquid resulting after the solution of the phosphate in lactic acid is evaporated to dryness.

No. 1,418.—Sassafras (L. L. L.).

Sassafras (root) bark contains no alkaloid. At least, Reinsch and others who have examined it have failed to find any. It contains a volatile oil, tannin, a peculiar substance produced from the latter by age and exposure to air, named sassafrid, starch, resin, waxy matter, gum (mucilaginous matter), and coloring matter.

No. 1,419.—Mentholine Cones (C. & Co.).

There are various qualities of "mentholine" cones sold in the market. We do not approve of the custom of diluting the menthol with inert substances, and much prefer that made with pure menthol itself. All that is necessary, we believe, is to press this substance into the requisite form. It is altogether wrong to combine non-volatile substances with the menthol, as has been several times recommended, and is said to be practised, because these substances will leave a greasy or shining mark on the forehead. The only thing that might possibly be mixed with menthol and compressed with it, is camphor, but we doubt whether such a mixture would become a favorite with the public.

No. 1,420.—Baking Powder (B. F. T.).

It is not possible for us to give you the composition of all the baking powders in the market. A few can be quoted here:

1. Horsford's Baking Powder

consists of two separate powders, one being pure bicarbonate of sodium, the other of acid phosphate of sodium and magnesium. This latter is prepared by decomposing bone-ash with sulphuric acid, evaporating the strained solution to a syrupy consistence, mixing with starch-flour, and drying. According to the quantity of starch present, 3 to 3½ parts of the acid powder are to be used for every 1 part of the alkali. To obtain as great a nutritive power as possible, Liebig (*Dingl. Pol. Journ.*, 191, 160) recommended to use bicarbonate of sodium and chloride of potassium. According to the investigations of Liebig, 50 kilos of flour require 1,338 Gm. of the acid powder, and 841 Gm. of the alkaline powder,

consisting of 446 Gm. of bicarbonate of sodium and 395 Gm. of chloride of potassium. These proportions are almost exactly in round numbers:

Flour.....1,000 parts.
Acid Powder..... 25 "
Alkaline Powder.. 17 "

the latter consisting of:

Bicarbonate of Sodium..... 9 "
Chloride of Potassium..... 8 "

2. Ordinary Baking Powder.

Bicarbonate of Sodium..... 3 parts.
Bitartrate of Potassium..... 5 "
Rice Flour..... 6 "

3. Another.

Bicarbonate of Sodium..... 4 parts.
Tartaric Acid..... 5 "

4. Another.

Bicarbonate of Sodium..... 4 parts.
Tartaric Acid..... 3 "
Indian Corn-flour.. 3 "

No. 1,421.—Warren's Styptic (E. M. J.).

This is the formula:

Acid. Sulphur.....f 35
Ol. Terebinth.....f 32
Alcohol.....f 32

Add the oil of turpentine gradually to the acid, shaking continually until the violent action is over; then add the alcohol in the same manner.

No. 1,422.—Emulsion of Turpentine (L. L. H.).

Oil of turpentine does not form a true emulsion. Yet it may be made into a so-called pseudo-emulsion, remaining homogeneous for some time, in the following manner:

Pour all the oil of turpentine ordered in the prescription into the vial (which should be dry), and shake it about so as to wet the whole interior of the vial; then add powdered gum arabic, in the proportion of 30 grains for every 2 fl. drachms of oil, and shake. This will produce a semi-opaque, milky mixture of the acacia and oil. To this may now at once be added syrup, aromatic waters, elixirs, fluid extracts, etc., when a homogeneous mixture will result on shaking. The more viscid the liquid is, the longer will the oil remain suspended. Before use, of course, it is always necessary to shake the bottle well.

No. 1,423.—Townsend's Pills (Corresp.).

The formula is the following. They have been in considerable use among physicians of our acquaintance:

Massa Hydrarg..... gr. 20
Cambogiæ..... " 20
Extr. Aloes..... " 20
Zingiberis pulv..... " 20
Ol. Menth. pip..... gtt. 3
M. Fiant pilulæ xvi.

No. 1,424.—Cologne.

A number of formulas suggest themselves, which has been given to him by a friend:

Oil of Bergamot..... oz. 3
" " Lemon..... drch. 1
" " Orange (Bitter) " 1
" " Lavender (Flowers)..... " 1
" " Rosemary (Chir)..... " 1
" " Cloves..... " 1
" " Cinnamon (Ceylon)..... " 1
" " Rose..... " 1
" " Neroli..... " 1
" " Bitter Almonds " 1
Tinct. of Musk..... oz. 2
Essence of Jasmine... " 2
" " Millefleurs " 2
Alcohol, deodorized.. gall. 2
Distilled Water..... " 1

No. 1,425.—Colors for Show Bottles (Wilmington).

Blue.—1. Sulphate of Copper. 4 av. oz.
Sulphuric Acid. 1 fl. oz.
Water 2 pints.
2. Sulphate of Copper. 2 av. oz.
Alum. 2 av. oz.
Sulphuric Acid. 1 fl. oz.
Water 2 pints.

Red.—1. Carmine. $\frac{1}{4}$ to 1 drm.
Water of Ammonia. q. s.
Water. 2 pints.
2. Tincture of Chloride
Iron. 2 fl. drm.
Sulphocyanide of Potassium (or Ammonium). 5 grains.
Water 2 pints.

Pink.—Salicylate of Sodium. 2 grains.
Tinct. of Chloride of Iron. q. s.
Hydrochloric Acid. q. s.
Water. 2 pints.

Dissolve the Salicylate of Sodium in the water and add, cautiously, Tincture of Iron in single drops until the proper tint has been realized. Hydrochloric Acid may be used carefully (in drops) to render the tint paler. Should too much acid have been added, restore the tint by the addition of Ammonia. It will now be much paler than at first.

Yellow.—1. Picric Acid . . . 100 grains.
Water. 2 pints.
2. Chromate of Potassium. q. s.
Water. 2 pints.

Dissolve enough to obtain the desired tint.

N. B.—To prevent the liquids from freezing, about 20 or 25% of Alcohol should be substituted for an equal amount of water.

No. 1,426.—Packing for Drainage Tubes (H. W. M.)

The sample of powder you sent us, which you say is a portion of that in which rubber drainage tubes have been packed, is simply powdered talc, soap-stone (or native Magnesium Silicate). As you correctly surmise, it is used with the object of keeping the tubes pliable and soft, and besides, to prevent them from sticking together.

No. 1,427.—Magendie's Iodine Solution (T.).

This consists of:
Iodine. 2 grains.
Iodide of Potassium. . . 4 drachms.
Peppermint Water. . . 6 fl. oz.
There is also a so-called "Magendie's Tincture of Strychnine," which is a solution of 3 grains of strychnine in 1 fluid ounce of alcohol. It will hardly be necessary for us to mention that Magendie's Solution of Morphine is a solution of 16 grains of Sulphate of Morphine in 1 fluid ounce of water.

No. 1,428.—Glycerin Honey (M. S.).
Glycerin Honey or Solidified Glycerin may be thus prepared:

Transparent Soap. . . 3 oz.
Water. 6 oz.
Glycerin. 12 oz.
Oil of Bergamot. . . 20 drops.
" " Cloves. . . . 10 " "
" " Mirbane. . . . 5 " "

Cut the soap into shavings and dissolve it in an evaporating dish with water; when dissolved, add the glycerin previously warmed, and boil for one hour, or until the liquid has been reduced to the measure of 1 pint. When nearly cool, add the essential oils and pour into a shallow tin or into the box specially designed for it.—**Note:** Any good commercial transparent soap may be used, provided it be hard and clear. This glycerin honey can be put up nicely in glass, or even in paper boxes. It cannot well be run

into moulds. The perfume may be modified according to fancy.

No. 1,429.—Diamond Cement (W. S.).

Isinglass. 2 parts.
Mastic. 1 part.
Alcohol. 3 parts.
Ammoniac (clear tears) 1 part.
Dilute Alcohol (50%) . . . q. s.
Water q. s.

Break the isinglass in fragments and soak them in water until it is softened; then add enough dilute alcohol to just cover it, and dissolve it with a gentle heat. Dissolve the mastic in the alcohol, add this solution to the former, and then stir in the ammoniac previously rubbed to a thick milk, with a little water. Pour the product into small, wide-mouthed vials. When wanted for use, set one of these in warm water until the contents become perfectly fluid.

No. 1,430.—Ethereal Iodine Vapor (J.).

The following formula was given in the British Medical Journal some years ago:

Iodine. 3 grains.
Ether. 2 drachms.
Carbolic Acid. 2 " "
Creosote or Thymol. . . 1 drachm.
Alcohol. 3 drachms.
Ten minims of this are to be dropped on the respirator for dry inhalation.

No. 1,431.—Tincture of Podophyllin (Etw.).

There are several formulæ on record. Martindale, in his Extra Pharmacopœia, mentions the following:

1. *Dobell's Tincture of Podophyllin.*
Podophyllin. 1 grain.
Tincture of Ginger. . . 1 drachm.
Alcohol to make. . . . 1 ounce.
Dose: A teaspoonful in water at bed-time, every night or every 2d, 3d, or 4th night, as required. This is reported to act more satisfactorily than podophyllin in pills.

2. *Ringer gives the following:*

Podophyllin. 1 grain.
Alcohol. 1 drachm.
Dose: 2 to 4 drops in tea or coffee, taken night and morning, are useful in sick headache and biliousness, where the bowels and liver are sluggish, in worried and overworked patients, and in chronic diarrhoea with cutting pains and high-colored stools. The taste is acrid and disagreeable.

3. *Ammoniated Tincture of Podophyllin.*

Podophyllin. 1 grain.
Aromatic Spirit of Ammonia. 1 drachm.
Dose: 2 to 6 minims as an alterative, 10 to 20 minims as a purgative and cholagogue, taken in a wineglassful of water or milk. Good podophyllin will dissolve perfectly in the spirit. This tincture has the advantage that it can be mixed with water, without causing the resin to separate. The vehicle also acts as a corrective (Martindale).

No. 1,432.—Assay of Dover's Powder (H. H. S.).

This correspondent asks us to suggest a *modus operandi* for determining, in the official Dover's powder, the percentage of morphine and emetine, and to identify the meconic acid and narcotine.

Dragendorff (in his "Chemische Werthbestimmung einiger starkwirkenden Drogen," 8vo, St. Petersburg, 1874) recommends to first exhaust the powder with 85% alcohol. This removes the alkaloids and leaves behind extractive matter, inorganic substances (if present) and milk-sugar. The further operation may be carried

on as follows: The alcoholic solution is evaporated at a very gentle heat to a syrupy consistence, and the residue treated with water acidulated with sulphuric acid. The cold aqueous solution, which should not be too dilute and have a distinctly acid reaction, is now shaken energetically and frequently with freshly rectified petroleum-ether (boiling below 60° C.). This removes none of the alkaloids contained in the residue, but it takes away certain other substances (coloring matter, etc.), which would contaminate the subsequent products. When repeated treatment with petroleum-ether ceases to remove anything further, the aqueous liquid remaining is rendered alkaline with ammonia and again shaken repeatedly with petroleum-ether. This treatment removes almost the whole of the emetine, though it is scarcely possible to separate this alkaloid completely and absolutely from the others. Narcotine is not removed (or at most only in traces) by this treatment. The aqueous liquid, still kept alkaline, is now shaken with benzine, which extracts any remaining traces of emetine together with the narcotine, and leaves the morphine behind. The residuary, aqueous, alkaline liquid is finally shaken with amyl alcohol, which extracts the morphine.

There are many other ways possible by which the separation of these alkaloids may be effected. For instance, the original acid liquid, prepared from the alcoholic residue, after being filtered and properly diluted, may be treated with water of ammonia in excess. This will cause the immediate and complete precipitation of emetine and narcotine, while morphine will remain in solution. The precipitates are immediately filtered off, and the filtrate containing the morphine set aside, so that the excess of ammonia will gradually evaporate, when the morphine will crystallize out. The precipitated alkaloids are washed with a little distilled water, and while still moist and amorphous, transferred to a small flask, mixed with very dilute water of ammonia, and shaken with amyl alcohol, which removes the emetine. [The washed precipitate may also be directly treated with this solvent.] On evaporating the amyl alcohol, the emetine will remain behind. The narcotine is not (or scarcely at all) dissolved by the amyl alcohol, of which it requires about 300 parts, and is left behind.

The meconic acid is best extracted from a separate sample of the powder by means of several portions of cold alcohol acidulated with hydrochloric acid. The alcoholic extract is evaporated, at a low temperature, to about one-sixth, then cooled and filtered, and the filtrate completely dried on the water-bath. The dry residue is extracted with boiling water, the solution filtered, and, if desired, freed from various coloring-matters, etc., by shaking with benzine. The final aqueous liquid is heated to boiling, neutralized with magnesia, the liquid filtered boiling-hot, and the filtrate concentrated to a small volume. The meconic acid may be separated by precipitating it with nitrate of lead, washing the meconate of lead, decomposing the lead-salt with hydrosulphuric acid, and evaporating the filtrate. The residue may be recrystallized from alcohol.—Consult Dragendorff, *Die gerichtliche chemische Ermittlung von Giften*, St. Petersburg, 1884.

Formulæ asked for:

1. Hunt's Remedy.
2. Sanford's Catarrh Remedy.
3. "Mixed Spice." What is it? Said to be used in preparing certain sauces, such as "Governor's Sauce."
4. Grove's Herb Extract.

BIBLIOGRAPHY.

FIFTH ANNUAL REPORT of the State Board of Health, Lunacy, and Charity, of Massachusetts. Supplement containing the Report and papers on Public Health. Boston, 1884, pp. 283, 8vo.

THE reports of this Board are among the most interesting and valuable of its class. The one just received, in addition to the General Report, has the following papers: 1. Tubular Wells for Domestic Water Supply. 2. The Sanitary Condition of Somerville. 3. The Weekly Mortality Reports of Massachusetts Cities and Towns. 4. First annual Report relative to the Adulteration of Food and Drugs. 5. Trichinosis. 6. Reports relative to the Sewerage and Sanitary Condition of Nantucket. 7. Arsenic as a Domestic Poison.

THE MATTHEWS CATALOGUE AND PRICE LIST revised for 1885 is an elegant specimen of pamphlet work of over 100 pages.

ANNALS OF SURGERY: A Monthly Review of Surgical Science and Practice. Edited by L. S. Pitcher, of Brooklyn, N. Y., and C. B. Kutley, of London, Eng. St. Louis: J. H. Chambers & Co.; London: Baillière, Tindall & Co., pp. 96, 8vo. \$5.00 per year.

THIS new journal, the first issue of which is at hand, is a most creditable affair. Its contents embrace original papers; An editorial summary of the surgery of 1884; the proceedings of the N. Y. Surgical Society; a good synopsis of recent surgical literature, and reviews of surgical works.

MEMOIR ON INFERIOR LINEAR EXTRACTION OF CATARACT WITH THE CAPSULE. By DR. RAFFAELE CASTORANI, Professor of Ophthalmology and Clinical Oculistics in the Royal University of Naples, etc. Extract from the Proceedings of the Royal Medico-chirurgical Academy of Naples, Vol. XXXVIII., Fascic. January to March, 1884, pp. 77, Aug., 8vo.

MEMOIR ON THE TREATMENT OF INFLAMMATORY ECTROPION, by DR. RAFFAELE CASTORANI, Professor of Ophthalmology and Clinical Oculistics in the Royal University of Naples. Extract from the Proceedings of the Medico-chirurgical Academy of Naples. Vol. XXXVIII., 1884, pp. 8 (4 plates), Roy. 8vo.

JEQUIRITY: Its Uses in Diseases of the Skin. By JOHN V. SHOEMAKER, A.M., M.D. Philadelphia, 1884. Pp. 11, 8vo. Reprint from *Trans. Med. Soc. of the State of Pennsylvania*.

PRACTICAL SUGGESTIONS UPON THE ALIMENTATION OF PATIENTS SUFFERING FROM DYSPHAGIA. By D. BRYSON DELEVAN, M.D. Pp. 11, 8vo. Reprint from *Med. News*, June 7th, 1884.

UEBER DIE LOCALISATION DES CORTICULLEN MOTORISCHEN CENTRUM DER LARYNX. By D. BRYSON DELEVAN, M.D. New York, 1884. Pp. 8. [Paper read before the International Medical Congress at Copenhagen.]

FIFTH BIENNIAL REPORT of the State Board of Health of Maryland. January, 1884, pp. 275, 8vo.

ONE ASPECT OF THE SUBJECT OF MEDICAL EXAMINATION as set forth in the work of the North Carolina Board of Medical Examiners. 1884, pp. 24, 8vo.

REPORT ON FRESH AND CONDENSED MILK. By C. E. MUNSELL, Ph.D. An Extract from the Fourth Annual Report of the State Board of Health of New York. 1884, pp. 43, 8vo.

UEBER DIE AUSSCHIEDUNG DES STRECHNINS. An Inaugural Thesis by PETER VON RAUTENFELD. Dorpat, 1884, pp. 44, 8vo.

THE TREATMENT OF SCIATICA, by V. P. GIBNEY, A.M., M.D., with Discussion at the Practitioners' Society. Reprinted from the *Medical Record*, pp. 16, 8vo.

NEW BOOKS.

Lunge (G.). *The Alkali Maker's Pocket Book of Tables and Analytical Methods for Manufacturers of Sulphuric and Nitric Acid, Soda, Potash, and Ammonia.* 12mo, London. 7s. 6d.

Marmé (W.). *Lehrbuch der Pharmakognosie des Pflanzen- und Thierreichs.* Part I. 8vo, 1844. \$2.10.

Materia Medica; physiologically and applied. Vol. I. 8vo, London, 1844. 18s.

Neumann (Dr. Carl C. O.). *Repetitorium der Chemie für Chemiker,*



ON HIS OWN GROUND.

Dr. Pillsbury: So you have been eating too much candy again. You will never get well as long as you do that. Emma (who has lately taken up physiology). Oh, I guess I will! The ghastly juice will chyme it into chyle when the agitation of the diagram will naturalize the inspiration and resolve it into sweetbread or pan-grease, which merely acts as a superfluous. — *Life*.

Pharmaceuten, Mediciner, etc. 8vo, Düsseldorf, 1884.

Rawton (O. de). *Les Plantes qui guérissent et les Plantes qui tuent.* (130 illustr.) 12mo, Paris. fr. 2.25.

Roberts (F. T.). *Notes on Materia Medica and Pharmacy.* 12mo, London. 9s.

Stoerck (E.). *Universal-Münzen-Tabelle.* Folio, Wien. \$0.45.

Strasburger (E.). *Das Botanische Praktikum. Anleitung zum Selbststudium der mikroskopischen Botanik.* (Illustr.) 8vo, Jena. \$5.20.

[The best work on the subject so far published.]

Valentin (W. G.). *A Course of Qualitative Chemical Analysis.* Revised by W. R. Hodgkinson and H. M. Chapman. 6th ed. 8vo, London. 8s. 6d.

Wachtel (A. v.). *Hilfsbuch für chemisch-technische Untersuchungen auf dem Gebiete der Zuckerfabrikation.* 8vo, Prag. 6 m.

Wershoven (F. J.). *Naturwissenschaftlich-technisches Wörterbuch.* Vol. I. (English-German.) Part I. 12mo, Berlin. \$0.25.

500 Practical Trade Receipts (general, remedial, veterinary) for chemists and druggists, including approximate formulæ for several popular proprietary articles. 3d ed. 8vo, London. 2s. 6d.

Formulaire pharmaceutique des hôpitaux militaires. 8vo, Paris, 1884. 5 fr.

Lescher (F. Harwood). *Recent Materia Medica: Notes on their Origin and Therapeutics.* 8vo, London, 2s. 6d.

PERSONALS.

Mrs. Louisa Reed Stowell, who for several years has been in charge of the Microscopical Laboratory of the University at Michigan, has lately been elected to a fellowship in the Royal Microscopical Society of London.

Professor R. Ogden Doremus, of New York, has been elected President of the N. Y. Medico-Legal Society.

Professor Dr. Herman Kolbe, of Leipsic, died of a disease of the heart, on the 25th of November.

Mr. Albert E. Ebert, of Chicago, has been appointed by the Governor a member of the Illinois State Board of Pharmacy.

A Henninger, formerly Professor of Chemistry of the Faculty of Medicine of Paris, and a pupil of Wurtz, died recently at the age of thirty-four years.

M. Foussangrives, formerly surgeon in chief of the French navy and a voluminous writer upon pharmacology, is announced by the *Gazette des Hôpitaux* to have recently died.

Mr. Henry Canning has resigned the presidency of the National Retail Drug Association on account of the demands of his private affairs.

Dr. Edwin Waller, of the Columbia College School of Mines of New York, is soliciting contributions to a fund which is being raised for the support of the family of the late Henry Watts, the well-known English chemist whose death left them in indigent circumstances.

Benjamin Sillman, formerly Professor of Chemistry in the Academic Department of Yale College, died at his home in New Haven, Conn., on the 14th of January. He was a son of Professor Benjamin Sillman, Sr., of New Haven, where he was born Dec. 4, 1816. He graduated from Yale College in 1837 and at once became his father's assistant in chemistry and geology, and in the editorship of the *American Journal of Science and Arts*. The laboratory for private instruction in chemistry and mineralogy which he opened to pupils in 1842, has since grown into the "Sheffield Scientific School," in which Mr. Sillman became the Professor of Chemistry Applied to the Arts. He was for several years Professor of Chemistry and Toxicology in the Medical Department of the University of Louisville, Ky., and resigned this chair in 1854 to succeed his father in the faculty of the Academic and Medical Departments of Yale College. This position he held until his resignation in 1870. In 1853 he took charge of the sections of Chemistry, Theology and Mineralogy of the Exposition held in New York, and in 1863 became one of the fifty original incorporators of the National Academy of Sciences.

American Druggist

Vol. XIV. No. 3.

NEW YORK, MARCH, 1885.

Whole No. 129.

[ORIGINAL COMMUNICATION.]

HOW TO MAKE DRUGGISTS' SHOW WINDOWS ATTRACTIVE.

BY S. J. BENDINER, OF NEW YORK,
AND PROF. J. P. REMINGTON, OF PHILADELPHIA.



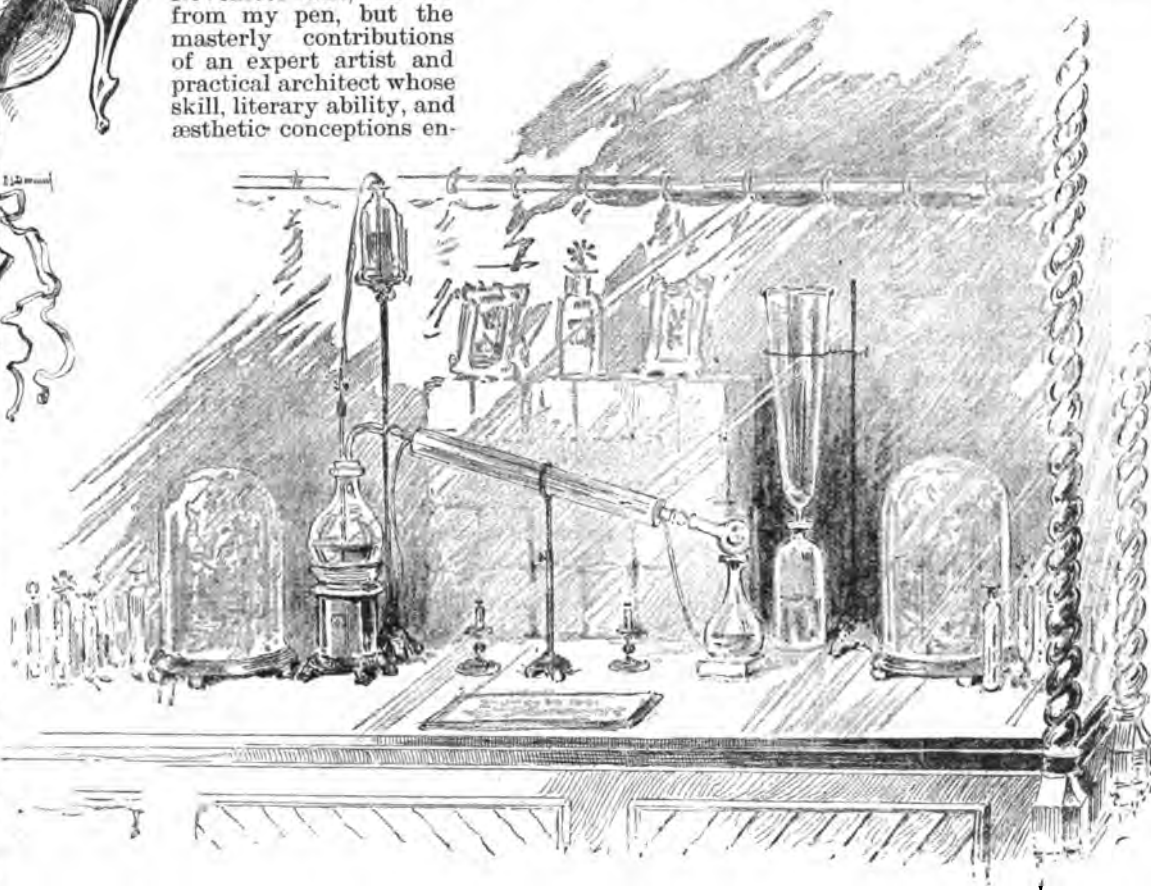
THE lively interest taken in the series of articles, headed as above, published and handsomely illustrated in this paper, make it incumbent upon me to return to the same subject.

The circumstance will not have escaped the attentive reader, that the articles appearing in successive issues after the one fathered by me in November last, are not from my pen, but the masterly contributions of an expert artist and practical architect whose skill, literary ability, and aesthetic conceptions en-

title him to occupy a foremost rank in his profession and whose statements merit the unqualified acknowledgement of being authoritative. On the other hand, the hints and suggestions which I have given and thrown out in my article upon this subject I consider, in comparison, of ephemeral value only; yet even they met, so far, with favorable comments by eminent writers, experts and manufacturers of artistic shop furniture. The accomplished editor of the *Canadian Pharmaceutical Journal* (December, 1884) devoted to my essay over an entire page and contributes many good remarks, thus adding to the literature of the subject. His comments I recommend to the careful perusal of all interested; the only fault he finds is with my inference "that in the majority of instances the apothecary's show window affords a tolerably reliable indication of the professional standing of the owner within." Of course, this is only my subjective view and has nothing to do with the real matter in discussion. If a professional man bestows little regard to his attire, or to his personal appearance, it is universally agreed that we call him, in the majority of instances, (in the current slang parlance of the day) "a slouch," and I contend with others, whose opinions I highly esteem, that a druggist's show window is his professional dress, and while I never imagined to accomplish over night, so to say, an entire revolution in the mode of exhibition of druggists' wares in their windows, I have at least endeavored to pilot my professional brethren into a proper and safe harbor. New houses will be built, old stores will be altered, and in either possibility the proprietor will find to his own advantage valuable hints and feasible plans suggested by the fertile professional writer of the articles published in this paper. And right here, however, I am afraid, we encounter a factor we have to guard against. We live in an imitative age; when we see a good thing we adopt it and multiply it *ad nauseam*, thus suffocating the germs from which new

ideas spring. Already, I am informed, a manufacturer of artistic shop fixtures copies the objects illustrated in my article, *Æsculapius*, shafts with eagle, pedestal, and all. Now fancy numerous druggists' windows of one avenue embellished in this stereotyped manner? If it came to this, I would hide my face in shame, for the field is large and productive of manifold new thoughts to which my own suggestions were intended to start the nucleus, to build around and to stimulate a healthful growth.

I am happy to state that I find a powerful advocate in this direction in the person of my esteemed friend, Professor Joseph P. Remington, of Philadelphia, who devotes in his book, "Remington's Practice of Pharmacy," now in press, a very able chapter to "Arrangements of Objects in Pharmacists' Windows." While enjoying his hospitality four weeks ago, the genial professor read this chapter to me in his sanctum, and upon my request he obligingly permits me to publish it *in extenso*, but modestly desires that the author's name should be withheld. In not complying with this injunction, I hope I commit no indiscretion, first, because the article bearing the stamp of such high authority, the reader will at once be impressed



with its import and bestow the most careful attention due to everything which the author says; second, it will be only a few months, when his article will be read by every professional man and student in the proper place in "Remington's Practice of Pharmacy."

I now proceed to quote this chapter upon

"ARRANGEMENT OF OBJECTS IN THE WINDOWS.

"One of the most difficult subjects for a professional pharmacist to attack is the proper arrangement of the windows. In our larger cities, in the general stores, 'window dressing,' as it is termed, is in the hands of educated men who earn a comfortable livelihood at the 'profession.' It is far easier to note the objects which should *not* be exposed than to indicate those which are suitable.

"*Legitimate and proper objects are always found in the products of the pharmacist's own skill and labor.* Many rare and beautiful chemical salts can be crystallized in thin glass dishes; these, if the salt is colorless or white, can be shown to advantage, on a back ground of black velvet; if the salt is dark colored, like chrome alum, a white background should be chosen. Masses of crystals of various colors, like alum, sulphate of copper, ferrocyanide of potassium, etc., etc., form attractive objects, if they happen to be novelties in the neighborhood; these may be obtained from the manufacturing chemists.

"Chemical or pharmaceutical apparatus, tastefully displayed, rarely fails to excite the admiration of some passers-by, whilst if some simple pharmaceutical process is shown in actual operation, like the distillation of water or

colored liquids in glass retorts, with a glass Liebig condenser, two objects will be gained—a supply of the distillate will be secured and the reason for possessing the window is legitimately realized. Growing plants of the *Materia Medica* can often be secured by applying to conservatories, or with a little patience and care some of these may be easily grown at home. If these plants be rare or of foreign origin, the interest is greatly enhanced. This point, however, should always be kept in view—the object should always have a bearing or connection with pharmacy. Appropriate labels should always accompany the objects exhibited, or the annoyance of having to answer trivial questions many times in the day will be experienced.

"An instructive series of window exhibitions may be devised as follows, the series to extend through many months. To illustrate: An empty ceroon which has held cinchona bark should be obtained and a reproduction, through some friend clever with the pencil, of some of the prints to be found in the books, of natives gathering cinchona bark, and also enlarged photographs or drawings of the cinchona tree; some large, handsome pieces of the bark should be selected, showing the different grades and qualities; then there should be exhibited, in appropriate bottles, a series of all of the home-made pharmaceutical preparations of cinchona bark, and, for the centerpiece, choice specimens of all of the cinchona alkaloids; then the pharmaceutical preparation of the alkaloids in the background, etc. A clearly written statement should be shown in the window, giving popular and useful details of each object. When the interest in this subject has waned, the same method may be applied to nuxvomica, coca, rhubarb, opium, eucalyptus, senna, etc., etc., and other similar subjects.

"It will be readily seen that the purpose of exhibitions of this character are to impress the community with the fact that the proprietor of the store is not only a merchant and dealer in the products of others' skill, but that he is a manufacturer himself."

Such excellent suggestions and recommendations will surely fall upon rich soil and ripen into wholesome fruit, for the author has adapted them not only for use by the pharmacists of the larger cities, but for that of the 30,000 druggists in the United States.

Concluding, I wish to call the kind reader's attention to one more subject which properly ought to have been mentioned in my first article. I allude to the pernicious practice of placing obstructing signs outside of the stores, such as bulletins announcing a list of soda waters, cigars for sale, etc., or a scaffolding whereupon hangs a specimen of cemented china to which a presumably heavy weight is attached; or to the permanent exhibition of a row of unsightly and dirty, empty, acid carboys, which ought to be put out of sight, if for no other reason, than out of deference to one's neighbors, whose good-will we court.

NEW YORK, January 22d, 1885.

[The illustration on the preceding page, made by our artist from a sketch furnished by Professor Remington, is intended to represent the manufacture of cocaine hydrochloride in the window. The percolator at work shows the mode of preparing the alcoholic fluid extract or acidulated tincture. The distillation represents the recovery of the alcohol; the reservoir bottle and siphon enabling the flask to be constantly fed with the percolate, while a siphon, not shown in the illustration, may be connected with the flask, and the distillate siphoned off as fast as it collects. The large object in the back-

ground is intended to represent the package in which the coca leaves reach the market, but it has been somewhat idealized by the artist to the extent of resembling more nearly a cotton-bale. In one of the glass globes the bright-green leaves are shown, and in the other the darker, brownish-green or inferior leaves. Standing on the bale are two drawings or illustrations of the growing plant (taken from Baillon or other authorities), and between them stands a precipitating bottle. The small bottles on the stands are intended to exhibit the wonderful alkaloid and its solution, while the larger bottles, on either side, contain the fluid extract, tincture, wine, infusion, elixir, etc., of coca. A carefully-written explanation of the objects exhibited occupies the foreground.—ED. AMER. DRUGGIST.]



HAGER'S SULPHURETTED HYDROGEN APPARATUS.

ONE of the forms of apparatus for generating hydrosulphuric acid gas, which recommends itself by efficiency and convenience, is one devised by Hager and described by him in his *Commentar zur Pharm. Germ. II*, vol. II., 786.

A two-necked flask with flat-bottom, [or a Woulff's bottle] and of about the capacity of 150 C.c. (5 fl. oz.) is charged with about 60 C.c. (2 fl. oz.) of diluted sulphuric or hydrochloric acid. The second neck, *b*, serves for the introduction of the sulphide and is closed with a rubber cork. Into the other neck is fitted a gas-washing vessel, consisting of a wide glass cylinder, closed at each end with a singly perforated rubber-stopper, and connected with the flask by means of the glass-tube *f*, passing through the stoppers *h* and *c*, the upper curved portion of the tube *f* being inside the glass-cylinder. The latter is filled up to *d* with water. A curved gas-delivery tube is provided with a bulb *g*, to receive and hold any larger quantity of liquid that might be sucked back when the delivery of gas ceases. *K* is a stand or holder for the test-tube containing the liquid through which the gas is to be passed. When not in use, the whole apparatus is covered with a bell-glass, which Hager directs "to be lined, inside, with colored paper."

Hager directs to use sulphide of zinc, in small pieces, $\frac{1}{4}$ to 2 Gm. at a time, which will be enough for one testing. And if a rapid generation of gas is desired, this may be hastened by gently warming the flask, removed from the support.

A RUSSIAN has patented a new match. By preparing wood, and impregnating it with a secret composition, it will ignite with slight friction, and can be used repeatedly.

[ORIGINAL COMMUNICATION.]

THE MANUFACTURE OF MERCURIAL PREPARATIONS ON A LARGE SCALE. *

BY AD. SOMMER, OF BERKELEY, CAL.

THE longest and most fatiguing of all pharmaceutical operations is the extinction of mercury in preparing blue ointment, blue mass, and mercury with chalk. Many of you have undoubtedly sought for and discovered methods, which, differing slightly from the orthodox pharmacopoeial regulations, serve the purpose of economizing time. I, like the rest of you, have rubbed, and kneaded, and worked over these preparations, till the sweat would flow from my brow and strong language from my mouth, and numerous are the experiments I made in order to lessen the labor. I do not intend to tire you by a description of the various methods I tried, but I will merely mention one, which was confided to me while yet an apprentice in my fatherland, by one of those over-worked and illy-paid members of our profession, who in my native land bear the euphonious title of "Herr Provisor," and are called here briefly, "clerk." Upon my promise never to reveal his name, for the petrified Apothecary-laws of Germany do not sanction any deviation from the rules laid down by the Imperial Pharmaceutical Commission, he showed me how, by shaking mercury with certain liquids, such as oil of turpentine or the resinous tinctures (Tr. Tolu, Tr. Benzoin), it could be brought to a state of fine division, in which condition it is easily mixed with semi-fluid fat. After this revelation mercurial ointment had no longer any terror for me, and whilst I was engaged in the retail business, I prepared, in this way, all of the mercurial ointment that I sold. However, while this method may answer the requirements of the retail pharmacist, who is the supreme judge of the quality of his preparations, on account of the addition of foreign substances (the oil of turpentine or the tincture) to the ointment, the method is unsuitable to the manufacturer who makes large quantities of mercurial ointment for the trade. When, therefore, being requested to make this ointment by the hundredweight, I was obliged to look for a different method. I searched all the pharmaceutical literature which was at my disposal for practical, working formulas, but did not succeed in finding any which satisfied me. I then made a number of experiments and was thereby led to adopt the following method and apparatus:

Mercurial Ointment.

Upon a solid board, which accurately fits into the frame of a sifting machine having a horizontal motion, are fastened, by means of wires and wooden cross pieces, two ordinary, iron mercury flasks. Into each flask are poured 25 lbs. of mercury and $2\frac{1}{2}$ lbs. of any liquid fixed oil, preferably Union Salad Oil. The plugs are then tightly screwed into the openings of the flasks and the whole apparatus is laid into the afore-said frame. The frame, which is attached to an eccentric crank, is then set in motion by connecting the latter by means of a belt and pulleys with the shafting of a steam motor, and allowed to be shaken for about eight hours. At the end of this time the mercury is in so fine a state of division that a magnifying glass with a power of 10 diameters will show no globules of mercury. In the mean time 46 lbs. of beef suet are melted, and, after liquefaction, allowed to cool to about 50 degrees centigrade. The contents of the two flasks are then emptied into a

* Read before the Alumni Assc. of the California Coll. of Pharm.

capacious pan and about one-fifth of the liquid fat added. This mixture is then vigorously stirred, till it has become semi-solid, when another portion of the liquid fat, which of course, by very little warmth, must be kept as near as possible to 50° C., is added to it. These additions and subsequent incorporations of liquid fat are continued until all of it has been added, observing only this special precaution: never to make any new additions before the previous one with the mercurial mixture has cooled down to a semi-solid state. The resulting mixture is generally tolerably uniform, but sometimes it happens that a small portion of fat hardens on the sides of the pan, before it can be incorporated into the mercurial mixture, thereby forming small lumps, which, on account of their yellow color, give to the finished preparation a mottled appearance. In order to overcome this objection and to insure complete homogeneity, it was found advisable to pass the ointment, while still warm, through an ordinary iron paint-mill, under the lower muller of which is placed a trough made of tinned sheet iron. This trough is provided with a spout on one side, and a steel spring on the left hand side of the spout, which spring serves the purpose of scraping the lower muller, when, during the operation of grinding, the muller turns in the direction from right to left.

After the hopper has been filled with the semi-solid ointment, the mill is set



Paint mill for mixing ointment.

in motion, whereupon the ointment flows down the spout in the form of a glossy, dark-gray band and may be allowed to run at once into the receptacle that is destined to hold it. Should the temperature of the work-room be so low that the ointment congeals within the hopper, the latter should be warmed occasionally by means of a small gas- or alcohol lamp.

When it is desirable to produce an ointment that is less crumbly than the one obtained by the previous formula and that will possess a tenacity for which an article sent out by a Philadelphia manufacturer is highly valued by some dealers, the object can be attained by adding to the fat from 6 to 10 per cent of rosin. The formula altered accordingly, for 100 lbs. of mercurial ointment, will be:

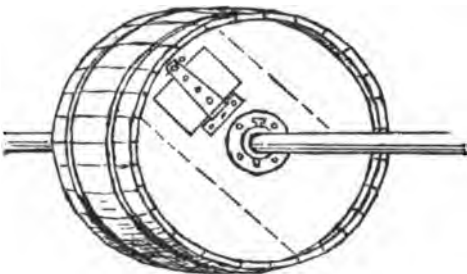
Mercury 50 lbs.
Union Salad Oil 4 "
Rosin 4 "
Fresh beef tallow 42½ "

Shake the mercury with the oil until the former is finely divided, and add to this compound the mixture of rosin and fat previously melted and cooled to about 50° C. Finally pass the whole while still warm through a paint mill.

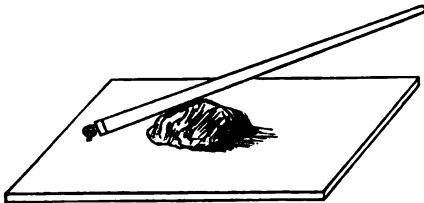
Blue Mass.

The extinction of mercury in Massa Hydrargyri is, perhaps, even more difficult than in Ung. Hydrarg., if you follow the directions of the U. S. Pharmacopœia; but by adopting a plan similar to the one just presented, the labor of preparing this article is reduced to a minimum. As in the pre-

paration of mercurial ointment, so in that of blue mass, a liquid is required to divide the mercury. But the problem of finding one, which would be unobjectionable for internal use and at the same time envelop the particles of mercury, as did the oil in the former preparation, and prevent their coalescence, necessitated many experiments. Remembering that ammoniacal glycyrrhizin, when dissolved in water and strongly shaken, gives a soap-like froth, I assumed that it might also possess the enveloping properties of soap, and therefore dissolved a little of it in a mixture of alcohol and glycerin and added to it a considerable quantity of mercury. After shaking the mixture for some time, the result was, as I anticipated: the mercury was finely divided and did not coalesce upon standing. Substituting then powdered licorice root for the ammoniacal glycyrrhizin and a mixture of glycerin, alcohol and water for the liquid previously used, I obtained the same result. Furthermore I found that a liquid composed of glycerin and water alone cannot be employed in this case on account of a thick froth, which forms on shaking, soon fills the vessel



Barrel for grinding mercury with chalk.



Lever for mixing blue-mass.

and, acting like a cushion, retards the motion of the liquids. From these experiments I deduced the following formula and method for preparing the compound in question, the quantities given being sufficient for one flask:

Mercury 25 lbs.
Glycerin 2 lbs. 5½ oz.
Water, } each 9½ fl. oz.
Alcohol }
Powdered Licorice root. . 3 oz.

These ingredients are all placed in an iron mercury flask, which is shaken precisely in the same manner, and by the same machine described above under mercurial ointment. After eight hours of shaking the mercury is found to be finely divided. The contents of the flask are then poured into a large dish and the honey added with energetic agitation. When this mixture has become perfectly homogeneous the proper proportions of powdered rose leaves, marshmallow, and licorice root (all previously sifted), that are requisite for 75 lbs. of blue mass, are incorporated. Finally, that the mass may be made perfectly homogeneous, it is divided into lumps weighing about 3 lbs., which are kneaded on a table by means of a lever consisting of a long wooden pole, which at one end is fastened by a swivel-joint to one side of the table, while the free end is manipulated by the operator. In place of the expensive rose leaves, which in this preparation serve apparently no therapeutic purpose, a mixture of powdered marshmallow, and licorice root, perfumed with the oil of rose, may be

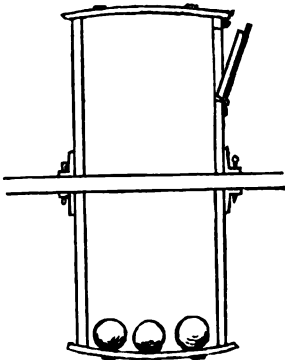
substituted with profit and is, perhaps, excusable.

Mercury with Chalk.

If it were possible that any pharmaceutical preparation could be even more tedious and aggravating than mercurial ointment and blue mass, it would certainly be Hydrargyrum cum Creta.

It matters not by what pharmacopœia you operate, you will, unless endowed with more than average human endurance, relinquish the work in disgust. The formula of the U. S. Pharmacopœia of 1880, which has been embellished with several extravagant modern improvements, has proven in my hands even worse than its predecessors. Where an inanimate machine is made to perform the labor of triturating, the official formula may be practicable. But the expense involved in constructing a complicated triturating machine, has induced several manufacturers to adopt more inexpensive methods.

Succussion, which serves so well to extinguish the mercury in the two foregoing preparations, is said to be equally serviceable in this case, but for various reasons, I have given the preference to a method lately devised by Mr. John Calvert, of San Francisco, whereby the extinction of the mercury as well as a complete mixture is effected by putting all the ingredients with some iron balls into a barrel and rotating the latter.



Section of barrel.

The apparatus I have constructed, and found very suitable for this purpose, consists in a rather flat barrel built of strong oak-wood, whose diameter is 20 inches and whose height (the distance from top to bottom) is 10 inches. The interior walls are planed perfectly smooth. Through the center of head and bottom is bored a one and a-half inch hole, over which (on the outside of the barrel) are fastened, concentrically, two strong, cast iron flanges, also having a one and a-half inch hole through their centres. By this arrangement the barrel can be readily placed on a one and a-half inch shaft, which is connected by pulley, belt, etc., with a steam motor. Two set-screws in each of the flanges serve to fasten the barrel to the shaft. In order to give access to the interior a piece of about four inches square is cut out of the top and fastened to the longer half of a T hinge, the shorter half of which is fastened to the solid portion of the head, while the other half, which overlaps the door by about two inches, passes over a staple, also driven into the solid portion of the head. By merely passing a tightly fitting plug of wood through the staple, after the door has been closed, the latter is effectually locked in the simplest manner.

When it is desired to make the mixture of mercury and chalk, a quantity of the ingredients necessary to make 25 lbs. of the finished product is placed in the barrel. At the same time three iron balls, each weighing about 5 lbs., are also put into the barrel, the door closed and locked,

the barrel placed on a shaft, and the latter caused to rotate slowly by connecting it with the steam-motor. After the barrel has revolved around its axis for about ten hours, it is taken off the shaft, the door opened and the contents removed. The mercury will then be found to be entirely extinguished and completely mixed with the other ingredients.

When this preparation is made according to the process just outlined, there appears to be no necessity for the employment of milk-sugar in conjunction with chalk. The addition of sugar of milk was professedly only made by the U. S. Pharmacopoeia in order to facilitate the extinction of the mercury, which purpose it does fulfil to a slight extent by the grinding action it exerts on account of the roughness of its particles upon the mercury. But when the extinction of the mercury can be so readily and completely effected without the sugar of milk by a machine, the manufacturer is apparently perfectly justified in returning to the original formula, sanctioned by all foreign pharmacopoeias as well as by all those of the United States that precede the 1880 edition, and make this preparation, as its name indicates, from mercury and chalk only.

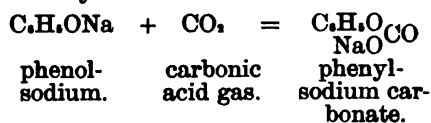
Improved Process for making Salicylic Acid.

We stated in our last volume that an improved process has been discovered for making salicylic acid on a large scale. Under Kolbe's former process, only one-half of the carbolic acid or phenol employed was converted into salicylic acid. Under the new process, the whole of it is so converted, and consequently makes a considerable saving in the cost of the manufacture. The owner or chief licensee of Kolbe's patent, Dr. F. v. Heyden, in Dresden, has acquired this patent from the discoverer of the process, Dr. Rud. Schmitt, for 100,000 marks. Whether the price of salicylic acid will be much lowered, or at all, is somewhat doubtful, as its preparation from phenol is still a monopoly.

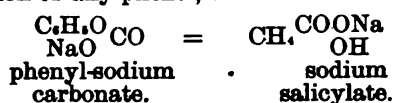
The new process may be briefly described as follows:

The dry phenolates (or carbolates) of alkalis and alkaline earths, prepared by acting with carbolic acid upon these substances in a caustic state, are exposed, at ordinary temperature, to a current of carbonic acid gas, until the latter is no longer absorbed. This causes the formation of a double carbonate of phenyl (C₆H₅) and of the alkali metal, for instance, with sodium:

Phenyl-sodium carbonate:



On heating the latter salt for a few hours, in a closed vessel, to 120-140° C., a molecular re-arrangement takes place in the salt, without the separation of any phenol, thus:



Upon opening the vessel no pressure is noticed, and the absolutely dry, powdery salicylate need only be dissolved in water, the salicylic acid separated by the addition of a mineral acid, and purified by recrystallisation, sublimation, or dialyzation in the usual manner.

There are several other methods named in the original patent, which are, however, only modifications of working details of the above process, and are entirely based upon it.

Improvement in the Preparation of Chloral.

ACCORDING to Page, a larger yield is obtained when the alcohol used for the preparation of chloral is treated with 5 per cent ferric chloride or thallium chloride previous to the introduction of chlorine. The resulting liquid, consisting of a mixture of chloral, hydrate of chloral, and chlorinated ethanes, which can be separated by fractional distillation, is subjected to distillation, ferric chloride or thallium chloride remaining in the residue. The chlorinated ethanes, which come over at a temperature above 100°, are purified by fractional distillation, the mixture of chloral and hydrate of chloral is distilled over calcium carbonate, treated with the requisite quantity of water, and the resulting hydrate of chloral re-crystallized from the chlorinated ethanes previously obtained.—*Dingl. Polyt. J. and J. Chem. Soc.*

Glycerin: The Relation of Percentage of Water to Specific Gravity.

G. TH. GERLACH has lately published the result of recent investigations on the subject of the percentage of water in glycerin at different specific gravities, and on the vapor-tension of glycerin solutions at 100° C. As that portion of the table which gives the relation of percentage of water to specific gravity is of importance and practical interest to many of our readers, we reproduce it here:

Parts of Glycerin in 100 Parts of Liquid.	Parts of Glycerin to 100 Parts of Water.	Specific Gravities.		Boiling Point (°C.) at 760 mm Pressure.
		At 15° C. (Water at 15° C. = 1)	At 20° C. (Water at 20° C. = 1)	
100	Glycerin	1.2653	1.2620	290
99	9900	1.2638	1.2594	239
98	4900	1.2602	1.2568	208
97	3233.33	1.2577	1.2542	188
96	2400	1.2552	1.2516	175
95	1900	1.2526	1.2490	164
94	1566.66	1.2501	1.2464	156
93	1328.571	1.2476	1.2438	150
92	1150	1.2451	1.2412	145
91	1011.11	1.2425	1.2386	141
90	900	1.2400	1.2360	136
89	809.090	1.2373	1.2333	135
88	733.333	1.2346	1.2306	133.5
87	669.231	1.2319	1.2279	130.5
86	614.286	1.2292	1.2252	129
85	566.666	1.2265	1.2225	127.5
84	525	1.2238	1.2198	126
83	488.235	1.2211	1.2171	124.5
82	455.555	1.2184	1.2144	123
81	426.316	1.2157	1.2117	122
80	400	1.2130	1.2090	121
79	376.190	1.2102	1.2063	120
78	354.50	1.2074	1.2036	119
77	334.782	1.2046	1.2009	118.2
76	316.666	1.2018	1.1982	117.4
75	300	1.1990	1.1955	116.7
74	284.615	1.1962	1.1928	116
73	270.370	1.1934	1.1901	115.4
72	257.143	1.1906	1.1874	114.8
71	244.828	1.1878	1.1847	114.2
70	233.333	1.1850	1.1820	113.6
65	185.714	1.1710	1.1685	111.3
60	150	1.1570	1.1550	109
55	122.223	1.1430	1.1415	107.5
50	100	1.1290	1.1280	106
45	81.818	1.1155	1.1145	105
40	66.666	1.1020	1.1010	104
35	53.846	1.0885	1.0875	103.4
30	42.857	1.0750	1.0740	102.8
25	33.333	1.0620	1.0610	102.3
20	25	1.0490	1.0480	101.8
10	11.111	1.0245	1.0235	100.9
0	0	1.000	1.000	100

Keratine-Coated Pills.

At the Medical Congress, held in Berlin, Dr. Unna described a pill-coating material which had been devised by him with the object of protecting pills from the action of the gastric juice, and yet allow them to dissolve

in the alkaline contents of the small intestine. The preparation, being obtained from horn, has been named "Keratine." It is insoluble in hydrochloric acid, but easily soluble in alkalis. It is made by digesting horn shavings first in artificial gastric juice, until all the albuminous substances capable of being dissolved out by pepsin and hydrochloric acid are removed, and then for several weeks in ammonia. The "Keratine" is dissolved by the ammonia, and upon evaporation of the solution until only a trace of ammonia remains, a gum-like liquid is obtained, which can be used for coating pills. As Dr. Unna has found that pills made with ordinary excipients are apt to swell and burst the keratine coating, he recommends the use of an excipient consisting of charcoal, almond oil and cacao butter. Each pill should be covered with a layer of cacao butter and then coated two or three times with keratine. Although not soluble in hydrochloric acid, keratine is soluble to some extent in acetic and citric acids; these acids, therefore, should not be given at the same time as keratine-coated pills. Notwithstanding the claim put forward in behalf of this substance, the *Medical Chronicle* (Nov., p. 182) states that some keratinized pills of salicylate of soda, prepared by a Hamburg pharmacist, recommended by Dr. Unna, when recently tested in the laboratory at Owen's College, did not remain unchanged upon being exposed to the influence of gastric juice at a temperature of 39 C., the keratine coating breaking down in ten minutes and traces of salicylic acid being then recognizable in the liquid. On the other hand, it is admitted that at the Congress Dr. Unna exhibited pills that were unaffected by artificial digestion.—*Pharm. Journal.*

The Purity of Honey.

ALL text-books contain the statement that honey contains varying quantities of levulose and of glucose, and that the latter become preponderant with age.

F. Elsner has ascertained that this statement is erroneous, and that the presence of glucose in honey can be recognized with the greatest ease and certainty.

On the basis of a large number of experiments made with different specimens of honey of undoubted purity, it was found that (as already stated by Schmidt in his *Ausf. Lehrb. der Pharm. Chem.*) aqueous solutions of honey turned the plane of polarization to the left. This examination is best conducted so that a 10 per cent aqueous solution is prepared from each honey, decolorized by means of animal charcoal, and then examined in a "Wasserlein" polarizing apparatus, which directly indicates the percentage of glucose. Genuine honey of every age and source, tested in this manner, showed that it only contained invert-sugar, and always so much of the left-rotatory levulose as to overcome the feeble right-rotatory power of the natural glucose present. In other words, *pure, genuine honey* is either neutral to polarized light, or more commonly turns the latter slightly to the left, *never* to the right.

Some dealers in honey are in the habit of adding glucose to natural honey, because the public seems to demand that the latter should remain liquid—without crystallizing—which is wrongly considered a sign of its purity. Such honey, when examined with polarized light, will be found to be more or less dextro-rotatory. The same effect is produced by the addition of grape-sugar, and also by inducing bees to feed upon glucose, which is, however, a ruinous process, since it causes sickness and speedy death among the latter.—*After Schweiz. Wochenschr. f. d. Pharm.*

NOTES ON PRACTICAL PHARMACY.*

(Continued from page 29.)

INFUSIONS AND DECOCTIONS.

WHEN water (wine, vinegar, etc.) is poured over drugs (species) in order that it abstract therefrom and take up the active constituents, it is called an infusion, *infusum*; but if the drug is boiled in the fluid for the same purpose, we obtain a decoction, *decoctum*. The infusion is usually made from such substances as contain volatile constituents which would be lost by boiling. The decoction, on the other hand, is primarily for the purpose of extracting mucilaginous, resinous, extractive, and other non-volatile substances.

Formerly, for the preparation of an infusion, the boiling hot water was allowed to act upon the substance to be exhausted, for half an hour or until cold, in a covered vessel; and for the preparation of a decoction, double the quantity of water was boiled down

cold water is poured over the species in a suitable vessel and heated for half an hour on the water-bath. During this time the mass is occasionally stirred, and then the still warm fluid is strained under pressure."

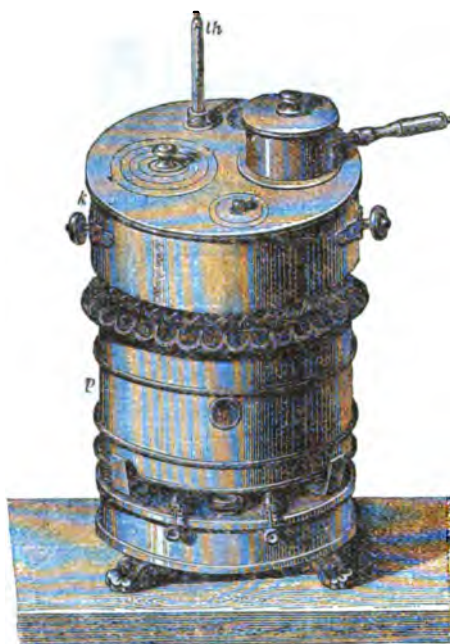
This mode of preparation is quite serviceable, and in the great majority of cases it suffices for the exhaustion of the vegetable drug, if the latter had been cut small enough or been bruised. In making an infusion, it must not be overlooked that the species are to be covered with boiling hot water, but that the pouring on of cold water and heating to the temperature of the boiling point is not admissible.

As soon as the species have been covered with water for the purpose of preparing a decoction or infusion, they are at once stirred with a porcelain or glass rod so that the species be completely below the level of the water.

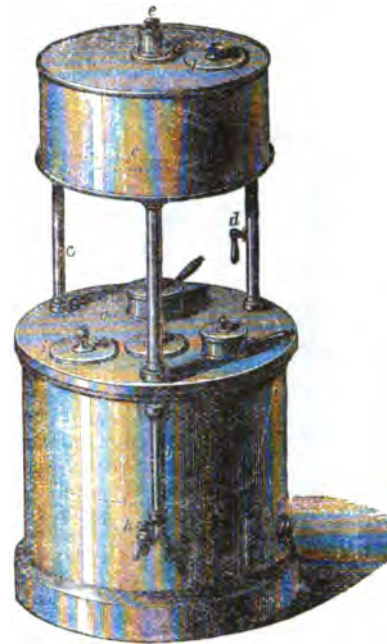
We also distinguish the following varieties of infusions and decoctions:

Cold infusion, *infusum frigidum paratum*; maceration, *maceratum*. This is prepared by covering the species with cold water (wine, vinegar) and allowing it to macerate under

although they do not meet all the demands made of a practical cooking apparatus, those with two burners commend themselves as handy and cheap heating apparatus for small decoctoriums, which can be put up in the prescription department or in a suitable adjoining room or in a chimney. Their use, however, requires in the first place the choice of a pure, good quality of oil, and secondly, some care in their attendance, especially the regulation of the flames. For this purpose the presence of a thermometer in the decoctorium is of great assistance. If there be no operation for the decoctorium on hand, the flames should be turned so small that the temperature of the water remains at 80 or 90° C. For use the flames are made larger without causing them to smoke, and in ten minutes the water in the decoctorium is raised to 100° C. For the preparation of an infusion, a decoction kettle is filled with water and kept permanently in the apparatus. For instance, the decoctorium figured in the adjoining illustration has been in almost daily use for many years without having required any re-



Kerosene stove with decoction apparatus. A, section of the decoctorium; wz, water gauge.



Large, showy decoction apparatus for dispensing establishments.

one-half with the species in a flat pan of tinned iron.

[Infusions and decoctions which are very frequently ordered in German practice, and to the preparation of which much time and care is devoted, are comparatively rarely used in the U. S., as the fluid extracts enable the physician to dispense with the former. For the manner of preparing our official infusions and decoctions, we refer to the U. S. Ph.].

The latter procedure has been altered in the last thirty years, since the so-called steam apparatus have been introduced; the decoction being changed into an infusion in which the digestion is extended over a longer time, at the heat of the water-bath at the boiling point. The German pharmacopoeia has given to the mode of preparation of an infusion and decoction the following definite form:

"For the preparation of an infusion, boiling hot water is poured over the species in a suitable vessel and allowed to remain for five minutes in the closed vessel on a water-bath, then removed from the latter, allowed to cool, and strained under pressure when cold."

"For the preparation of a decoction,

frequent stirring for one day at the ordinary temperature, provided the physician has not limited the period of maceration. The ordinary infusion, in the more restricted sense, as opposed to the cold infusion, is hot prepared or an infusion by digestion.

Decocto-infusum, a combination of decoction and infusion, consists in that to the hot decoction, previous to being strained, some species is added. After five minutes' digestion in the steam-bath, it is set aside to cool, and the cold fluid strained.

Infuso-decoctum, a combination of infusion and decoction, is one in which the species is first covered with half the amount of the hot water required, then placed for five minutes in the steam-bath, allowed to cool, and strained; then the species is covered with the other half of cold water, heated for half an hour in the steam-bath, and strained while still hot. The two preparations are mixed. This procedure is nearly obsolete.

By boiling hot water is meant water heated in the steam-bath, the temperature of which is between 95 and 100 degrees. In ordinary life, boiling hot water is understood to mean water at the temperature of 100° C. (212° F.).

Since the introduction of petroleum as a cheap illuminating material, efforts have been made to produce apparatus which would make it available for heating purposes. Of the kerosene stoves at present in the market,

pairs or become otherwise inconvenient.

The apparatus is made of strong sheet copper. The upper, wider portion measures 22 Cm. in diameter. The cover is provided with two openings which can be reduced by brass rings and serve for the reception of the infusion or decoction kettle. The cover contains besides three smaller openings lined with tubes in which can be inserted, according to requirements, a thermometer, a water gauge, and a return-flow tube. In my opinion, a thermometer is indispensable if a decoction or infusion is to be prepared according to the directions of the German Pharmacopoeia, for the steam-bath must have a temperature of 100° C.

The thermometer is inserted by means of a perforated cork, and is protected by a brass tube, provided with a slit through which the scale is visible. The return-flow cooler is either a simple, strong glass tube, about 25 Cm. long, or else a brass vessel containing a lead or tin worm which opens into the external air at the top of the vessel. This is likewise inserted into the decoctorium by means of a cork. The water gauge consists of a brass tube inclosing a round brass rod, which is provided with a small hollow brass sphere at the upper end and a larger one at the lower end. This is likewise inserted by means of a perforated cork, but in

* The basis of this series of papers is the latest edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany, and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

such a manner that the small ball closes the tube when the water level has sunk to the height of 5 Cm.

The various appliances which are in use agree in their arrangements with those described. The more elaborate ones consist generally of a copper pot with straight walls, or of a rounded kettle having a tin or brass cover which is either soldered on or fastened with screws; usually they have no float and but rarely a water gauge. In larger establishments we find in the dispensing department a decoction-urn which serves at the same time as a heating apparatus, and which is of the most conspicuous elegance. Its external covering is made entirely of sheet brass, which of course must be frequently polished in order to appear always bright. The apparatus consists of the fire-place (*h*), with the water-bath (*a b*), and a supply reservoir (*e d c*). The parts are connected by three or four brass columns, two of which are tubular. If the fire-place is intended for wood or coal, it is lined with chamotte (fire-brick) and a chimney is supplied. But if ordinary illuminating gas is used for fuel, the fire-place is lined merely with strong tinned sheet iron, and the gas tube terminates below the middle of the water-bath. A chimney is superfluous



Hand decoction vessel with kerosene stove for night work.

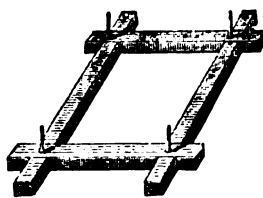
ous in the latter form. The water-bath is of copper, strongly tinned on the inside. On the side of the lower part of the apparatus is a water gauge (*b*), the lower frame-work of which ends in a faucet (*h*). The latter is used for drawing hot water for decoctions and infusions, as well as for emptying the water-bath.

In very small establishments where the preparation of infusions and decoctions is but rarely called for, as well as for night work, the hand apparatus is employed. It consists of a brass water-bath (*b c*) provided with a handle. Above, it terminates in a brass ring (*b*) for the reception of the infusion kettle (*a*). The opening of the water-bath can be reduced by one or two heavy rings, so as to answer also for smaller vessels. The water-bath is filled two-thirds full of water and heated by means of a spirit lamp or a gas flame. As soon as steam escapes between the ring and the infusion kettle, the flame is made smaller, so that it serves merely for warming. Other forms of infusion or decoction vessels are shown in the adjoining figures.

STRAINING, COLANDERS, STRAINERS.

In order to remove the exhausted species, the infusion or decoction is strained; passed through a straining cloth. The simplest, cheapest, and most cleanly straining cloths are those of unbleached linen of square form. For the purpose of straining, the cloth

is laid over a pot-shaped porcelain or tin vessel with spout, or straining pan, in such a way that its middle depends somewhat bag-like into the vessel. Into this bag-shaped depression the fluid with the species is carefully poured. After the liquid portion has run off into the vessel, two opposite corners of the cloth are placed together, rolled lengthwise into each other, then with both hands the ends of the now cylindrical cloth are grasped and twisted with some force in opposite directions, in order thus to express as much fluid as possible from the species. If the quantity of the species is too



Frame for holding strainer.



Hand decoction apparatus resting on a spirit lamp.



Hand decoction vessel.

large to permit of thorough expression in one operation, it must either be expressed in several portions or a press must be used. The straining cloth may also be stretched on a frame, the fluid allowed to drain off, and the species then placed in the press.

In this connection it may be remarked that an infusion of althæa root must never be strained with strong hand or machine pressure, otherwise a turbid, unsightly liquid would result, because small particles of the slippery root are thus forced through the meshes of the straining cloth.

Straining should be done with a certain dexterity, lest any of the fluid be spilled or some of the species be dropped. In order to compress the solids in the cloth and withdraw them easily and completely from the infusion kettle, an extract spatula or a silver spoon is employed.

Straining must never be done in the sight of the customer. No matter how neatly and tidily performed, this operation is not one that would stimulate the appetite of the patient for the medicine.

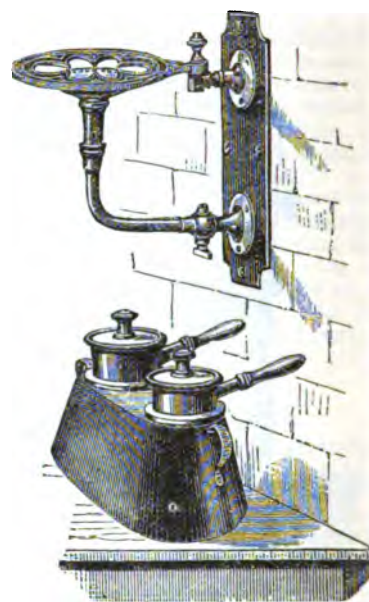
Strainers.—Good unbleached, not too dense linen, is, as above stated, the best and cheapest material for strainers, for ordinary dispensing purposes. When they have become deeply stained or unsightly by frequent use, they are thrown aside. In order to fit the linen for strainers, it is cut into square pieces of three or four different

sizes, adapted respectively for ten, twenty, thirty, and fifty grammes of species. The pieces are hemmed, and then freed from all dressing by steeping in cold and hot water. For the straining of colored infusions and decoctions, always choose cloths stained by use; for almost or quite colorless preparations, such cloths as are still in their natural condition.

Strainers of milling or bolting-cloth are valuable because they are readily permeable by thick or viscid liquids, especially emulsions. Flannel strainers should be altogether rejected for dispensing purposes. They are not only hard to clean, but they become unsightly, too dense from shrinking, and are always dusty.

The solution of salts, extracts, manna, etc., in the hot, unstrained infusions or decoctions is not permissible; this is effected only in the strained liquids, even if thereby a second straining becomes necessary.

Every strained liquid is allowed to deposit for some minutes and then decanted from any sediment which may have formed. Decoction of saleg forms an exception. Comp. above, p. 29 (February number.)



Hand apparatus with gas burner.

MACERATION—DIGESTION.

A maceration is a cold infusion of twenty-four hours' duration unless the prescription directs a different length of time (comp. above), and by digestion is understood the action on a drug for twenty-four hours of a fluid at a temperature of from 50 to 70° C.

All these operations are effected in a vessel closed by a lid when the menstruum is water, wine, or vinegar. With dilute alcohol the digestion is effected in a glass flask closed with a moist bladder perforated by a pin hole [or better, in a glass flask provided with an upright condenser]. The temperature prescribed by the German Pharmacopœia for the digestion in the preparation of tinctures (35 to 40°) is much lower, but the duration of the digestion is eight times as long. The straining after a maceration or digestion is the same as in the case of decoctions.

Ethereal liquids can only be used for macerations, even if the prescription directs digestion.

GELATINS OR JELLIES.

Gelatin, jelly, *gelatina*, is the name applied to a non-fluid, very soft, slightly elastic, homogeneous, usually transparent or translucent, non-plastic mass melting at a low heat, which moves tremulously when touched. Its consistence is such that a portion can be smoothly cut off with a spoon and a depression remains in the place of the

removed portion. When quite cold, the gelatin must not flow from the inverted vessel; it must also yield to light pressure, but resume its previous form after the pressure is removed.

For every 100 Gm. of gelatin are required: 4 Gm. of isinglass, 5 Gm. of dry gelatin, 10 Gm. of Irish moss, 15 Gm. of Iceland moss, 10 Gm. of starch flour, 10 Gm. of hartshorn, 3 Gm. of salep, 5 Gm. of tragacanth.

The gelatins prepared by boiling, skimming, etc., do not reach their required consistence until they have stood for three hours in a cool place.

The additions to the gelatins are made to the hot strained liquid or to the hot skimmed fluid.

In order to impart to gelatin made of Iceland moss the proper consistence and render it more durable, there is frequently added to it a small quantity of isinglass or white glue, about 2 Gm. for each 100 Gm. of strained liquid. For the production of a clear gelatin, it is customary to add to the concentrated strained decoction of a vegetable drug some (one-tenth to one fifth) sugar, even if not prescribed, then to skim it while gently boiling, and after the liquid has boiled down to the directed measure, to make the remaining additions such as wine and medicinal syrups. Volatile oils, rubbed up with some sugar, and other substances, too, such as tinctures, bitter-almond water, etc., are added to the still warm liquid, that is, before it gelatinizes.

Colla piscium, ichthyocola, isinglass in flakes, for the preparation of gelatin, is either macerated in pieces in the water for twenty-four hours, stamped to a pulp in a mortar after the water has been poured off, and then dissolved in the decanted water on the steam-bath, or else it is cut into very small shreds and heated, short of the boiling point, best in the steam-bath, with twenty times the quantity of water or wine, under occasional stirring, until dissolved. Then the sugar or syrup and the remaining water or wine is added, the whole reheated and strained. The mixture is then set at rest in a cool place until cold. Good isinglass forms with twenty-five times its weight of water a gelatin of good consistence which bears small additions such as fruit juices, tinctures, medicinal syrups, without losing its body. Acids, acid fruit juices (deprived of pectin) disturb the gelatinization more or less. An admixture of bodies containing tannin is not admissible.

Iceland moss, 20 parts, are boiled several times over an open fire with 200 parts of water; after straining, 20 or more parts of sugar are added, and boiled down to 100 parts with frequent skimming. An addition of one-tenth of Irish moss to the Iceland moss furnishes a more slightly, more lasting, and consistent gelatin. The German Pharmacopoeia, moreover, contains directions for a *Gelatina Lichenis Islandici* which is to be strictly followed where the prescription calls for this preparation.

Irish moss, *Fucus crispus* [Chondrus crispus] furnishes a perfect jelly when boiled with only 30 parts of water. Where the physician leaves the production of the jelly to the judgment of the dispenser, 10 parts of the cut moss are boiled a few times with 200 parts of water, strained, 20 parts of sugar added, boiled again, skimmed, strained, etc., to obtain 100 parts. The G. Ph. also contains directions for a *Gelatina Caragaheen* which, of course, must be followed if the prescription calls for the pharmacopoeial preparation.

Helminthochortos jelly is prepared in a similar manner as that from Irish moss, but it is preferable to add to the worm moss one-tenth of Irish moss and to bring the strained product, in-

clusive of the added sugar, to ten times the quantity of the worm moss.

Salep gelatin. 10 parts of the finest salep powder are mixed with an equal quantity of sugar and stirred up with cold water so that no lumps remain, then at once mix with not more than 250 parts of boiling water, heat for a few more minutes on the water-bath, and sweeten with 50 to 100 parts of simple syrup (*Syrupus Rubi Idæi*, *Syrupus Aurantii corticis*, etc.). Not to be strained.

Arrowroot, *Amylum Marantæ*. The gelatin is prepared in a similar manner as salep gelatin, but 20 parts of arrowroot are used for 200 parts of strained liquid.

For "hartshorn," 100 parts take dry white gelatin, 10 parts, dissolve in 200 parts of hot water, add simple syrup (30 parts), and strain.

Jelly from fresh fruit juices. The latter are mixed with half the quantity of sugar, boiled and skimmed, and strained. To 100 parts of juice after skimming, sometimes 1 part of isinglass or 2 parts of gelatin are added. The pectin in the fruit juices forms with the sugar the gelatinizing substance.

If almond emulsion is to be added to a jelly, the emulsification is performed in a warmed mortar with the warm (not hot) fluid which is to gelatinize.

If the prescription requires that the jelly be clarified, the decoction is mixed with albumen diluted with some water, and the boiling continued until the albumen is coagulated and separable by straining. Clarification with albumen, however, is superfluous if sugar enters into the gelatin, because the sugar during boiling favors the separation of impurities so that the clarification can be effected by skimming. Jellies of salep and arrowroot are never clarified, because they do not admit of it.

Jellies are dispensed in porcelain pots or glass vessels, the mouths of which admit a large teaspoon.

Gelatina Balsami Copaibæ, *Gelatina Olei Jecoris Aselli*, *Gelatina Olei Ricini* are not jellies in the above sense; they are, it is true, called oil gelatins, but the term solidified fats (e. g., *Oleum Ricini solidificatum*) would be more appropriate. They are prepared by melting together 5 to 6 parts of the oil or balsam with 1 part of spermaceti and allowing to congeal. For *Gelatina Olei Ricini* take for 8.5 parts of oil 1.5 parts of spermaceti, or perhaps white wax.

In case the physician demands the preparation of one of these jellies with gelatin, the following prescription should be used:

℞ Gelatinæ puræ..... 20.0 Gm.
Solve in
Aque fervidæ.....150.0 "
Syrupi simplicis....100.0 "
Tum adde
Olei Jecoris Aselli..250.0 "
(Olei Anisi stellati. gutt. 5)
[Triturate in a wedge-wood mortar until a homogeneous mass is produced; allow to cool partly, and pour into glass vessels, which should be put in a cool place].

SATURATIONS.

By the term saturations (*Saturations*) are understood in receptology fluid mixtures of carbonic bases with acids which, in consequence of their mixture, have approximatively lost their alkaline and acid qualities, and retain a portion of the liberated carbonic acid in solution.

On account of this contained carbonic acid such a mixture is generally distinguished by the term effervescent draught. Other synonyms are: *Potio Riveri*, River's draught.

The remedial value of a saturation depends in general upon its being freshly prepared and upon its containing an appropriate amount of carbonic

acid, which latter also gives it its special flavor. It should barely change the color of red litmus paper, but should have a passing reddening effect on blue litmus paper, owing to the contained carbonic acid; that is, it should be as neutral as possible. It is not necessary that it should contain so much carbonic acid as to foam like champagne; but under no circumstances will the rules of receptology permit the mixing of saturations in mortars, or to filter or strain them.

In order to prepare a saturation *secundum artem*, the carbonic salts and the acids must be mixed in a proportion ascertained by previous experiments, and in such a state of purity that they mutually saturate each other after mixture, and so as not to require straining or filtration after saturation.

As regards the quantities in which carbonic bases and acids, such as are ordered by physicians for saturations, neutralize each other, they must be approximatively calculated stoichiometrically; some acid liquids, too, according to the directions of the pharmacopoeia, must contain sufficient acid to saturate certain quantities of an alkali, e. g., vinegar.

[On pages 430 to 432 of the U. S. Ph. (1880) will be found tables giving the saturating power of the principal acids and alkalies.]

Lemon juice, of the strength of vinegar containing six per cent of hydrated acetic acid, corresponds to a solution of 7 parts of crystallized citric acid in 93 parts of water.

For the preparation of a saturation the German Pharmacopoeia furnishes a specimen in the directions for *Potio Riveri (saturatio officinalis)*. The directions read:

Take Citric Acid, four (4) parts; and Distilled Water, one hundred and ninety (190) parts.

Put them into a bottle which will be nearly filled by them.

The solution having been effected by agitation, add in small quantities, specially selected clear pieces of Pure crystallized Carbonate of Sodium, nine (9) parts.

Solution having again been effected by agitation, the vessel should be closed.*

All saturations should be prepared strictly in this manner unless otherwise directed by the physician; that is to say, a bottle is to be filled with the acid fluid until there is room only for the volume of the alkali to be added; then the latter is put in, if it be a carbonate or its solution, gradually in small portions and with gentle agitation of the acid fluid. At the end of this operation the bottle is closed.

The directions for *Potio Riveri* show, furthermore, that special retention of the liberated carbonic acid is not admissible, hence that the escape of the gas should be unhindered.

According to the old-established way, a saturation is thus prepared: Into the bottle intended for the saturation the alkaline carbonate solution is first weighed and then the acid, but very cautiously. Then the bottle is taken from the scales and allowed to stand for several minutes, with occasional gentle agitation. When the alkaline carbonate solution is added to the acid, some of the developing carbonic acid always rises into the vessel containing the alkaline liquid and causes the formation of bicarbonates, which, at moderate temperatures, adhere to the walls of the vessel, and, being thus withdrawn from the liquid, decrease

* For the preparation of different quantities of *Potio Riveri* or *Saturatio officinalis* of the Germ. Ph. are required:

Potio Riveri, Gm.....	30.0	40.0	45.0	50.0	60.0
Acid. citric.....	0.6	0.8	0.9	1.0	1.2
Aq. destill.....	28.5	38.0	42.7	47.5	57.0
Sod. carb. crist.....	1.35	1.8	2.0	2.25	2.7
Potio Riveri, Gm.....	70.0	80.0	100.0	120.0	150.0
Acid. citric.....	1.4	1.6	2.0	2.4	3.0
Aq. destill.....	68.5	78.0	95.0	114.0	142.5
Sod. carb. crist.....	3.15	3.6	4.5	5.4	6.75

its saturating power. Moreover, the alkaline carbonate solution is specifically heavier. When poured in, therefore, it suddenly penetrates the acid layer, and a violent effervescence results, which not rarely expels a portion of the fluid from the vessel. But if the alkaline carbonate solution be put first into the vessel, and the acid solution be allowed to flow slowly along the inner wall of the vessel, the latter collects above the alkaline solution and only very slight effervescence takes place. In this way the mixture and mutual saturation of the liquids can be easily and gradually effected by gentle, repeated agitation of the bottle, with less loss of carbonic acid.

Special additions to saturations are always made after the effervescence has ceased. When the foaming has moderated, any additions, such as syrup, extract solutions, tinctures, etc., are weighed in. If there be added to the saturating fluids, before effervescence, any mucilaginous fluids such as mucilage of acacia, or syrup of althæa, the effervescence and foaming will be too violent, and will either moderate very slowly or force the mixture out of the bottle in the shape of froth. Although in the preparation of mixtures it is a fundamental rule always to weigh the smaller quantities of fluid additions first into the mixture glass, an exception is made in this case for the above reason. Alcoholic components which contain no resins, volatile oils, ether, or similar substances, can be weighed in before the saturating fluids are mixed. The separation of resin or volatile oil, and the volatilization of ethereal substances with the escaping carbonic acid, should be avoided as much as possible.

Tartrate of potassium is added in powder after the saturation has been effected. In order to prevent the separation of bitartrate of potassium, the saturation is generally kept slightly alkaline. Solution of *Succus Liquiritiæ* must always be added last, owing to the combination of the acid with the glycyrrhizin.

Salts must not be dissolved in the warm saturation, but the solution is effected by adding the salts in powder, or else they are dissolved in the water, which, possibly, is to be added to the saturation. At all events, saturations are not to be mixed with warm or hot fluids, because the carbonic acid would thus be expelled.

Where the physician demands a saturation containing a great deal of carbonic acid, he will indicate this by prescribing bicarbonate of sodium or bicarbonate of potassium. In that case the indifferent substances are first weighed into a strong mixture bottle, then the powdered bicarbonate is added, is allowed to sink to the bottom without agitation, and lastly, the acid fluid is added, the bottle closed with a very tight-fitting cork and capped, avoiding every agitation, and the mixture placed in cold water, where it is gently moved to and fro until the bicarbonate is dissolved. 100 Gm. of cold water will in the summer easily absorb and retain the carbonic acid from 1 Gm. of bicarbonate of sodium.

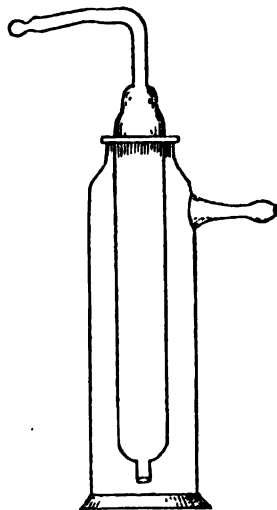
The saturations most frequently called for are those of carbonate of potassium with vinegar or lemon-juice. The acid contents of the vinegar of the German Pharmacopœia are pretty definitely limited; but still it would be advisable to keep on hand a saturating vinegar, the acid contents of which are adjusted to an equivalent quantity of liquor potassii carbonatis.

Saturations with lemon-juice. Freshly-expressed lemon-juice usually contains acid enough for 63 to 65 Gm. of it to saturate 15 Gm. of liquor potassii carbonatis, and if the acid contents were larger or smaller, such a saturation is diluted with enough distilled water to bring the quantity of the

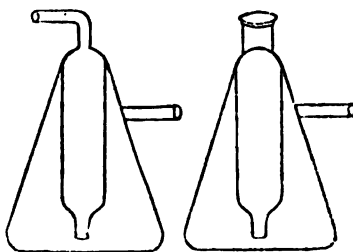
saturation to six times that of the liquor potassii carbonatis employed.

The average yield of expressed juice from one lemon is 22 Gm. For 5 Gm. of carbonate of potassium, or 15 Gm. of liquor potassii carbonatis, calculate the juice of three lemons.

It happens now and then that lemons cannot be obtained or that none are at hand in the night-time. In such a case of necessity the lemon-juice is replaced by an equivalent quantity of crystallized citric acid. In that event the saturation is colorless unless it contains some colored addition, while the saturation from fresh lemon-juice is faintly yellowish and not quite clear. This admissible substitution, therefore, should be marked on the prescription. In many establishments filtered *Succus Citri recens* is kept in stock.



Habermann's wash-bottle.



A citric acid solution having the saturating power of vinegar (containing 6 per cent of absolute acetic acid) is obtained by dissolving 7 parts of crystalline citric acid in 93 parts of distilled water.

If the prescription bears the remark *q. s. ad saturationem acidam* or *alkalinam*, this means that the saturation is to have a faintly acid or alkaline reaction. In this case the saturation is made as usual, only the acid or alkali is increased by one-twentieth.

Bottles for Saturations.—Saturation mixtures are always dispensed in bottles of strong glass. A slight rise of temperature increases the expansive power of the free carbonic acid so that the bottle is very liable to burst. There is in the market a prescription bottle with doubly thick walls, which is in general use for dispensing saturations. The bottles must always be tightly corked.

When delivering the saturation to the messenger, he should be told that the bottle must be placed well corked into cold water, unless a label be affixed which reads: "Keep the bottle cool by placing it in cold water."

Occasionally the messenger or patient should be informed that this medicine foams, and that its value depends on that fact. For some patients from the lower classes would not take the saturation mixture under the impression that it was spoiled. The physician had failed to enlighten them beforehand.

(To be continued.)

A NEW WASH-BOTTLE AND ABSORPTION APPARATUS.

A new form of wash-bottle, devised by J. Habermann, is shown in the accompanying cut. It has this advantage, that it absolutely prevents the retrocession of its liquid contents into the generating vessel, when the pressure in the latter sinks below that of the external air, as is sometimes the case when generating hydrochloric acid, ammoniacal or other gases. Generally, this is prevented by making the tube carrying the gas dip only a very slight distance below the liquid. But in this way the gas never can be properly washed. In the new wash-bottle, the gas must pass to the very bottom, and, should the liquid at any time recede, the enlarged portion of the wash-tube is capable of holding the whole of the liquid contents until air can enter below and thus equalize the pressure.

On the same principle, the author has constructed a new absorption-apparatus, such as is used, for instance, in the quantitative determination of ammonia.—*Chem. Centralbl.*

New Forms of Suppositories.

THE latest forms we read of in the pharmaceutical press are:

1. Hollow suppositories of gelatin, provided with a lid or cap, which may be fused on without difficulty, after the ingredients have been introduced into the cavity. We have always had a mild prejudice against gelatin suppositories, at least in the case of drugs which are expected to be absorbed rather quickly. But we can conceive only a limited number of cases where the use of a hollow suppository charged with an active drug would be preferable to one made of cacao butter, with which the drug had been thoroughly and evenly mixed.

Hollow suppositories of cacao butter have been in use for some time.

2. Canellated suppositories, that is such as are provided with grooves on the outside. These are said to facilitate their introduction, and the underlying idea in this case seems to have been the principle of the rifled cannon, or rather that of the "rifled cartridge."

Choline Recognized as one of the Ptomaines.

L. BRIEGER has obtained from human cadavers which were only in the incipient stages of decomposition, a compound which was recognized, from its double platinum-salt and especially its double gold salt, as *choline* (that is trimethyl-oxy-ethene-hydrin-ammonium-hydroxide), and he arrived at the conclusion that no other poisonous substance is probably present in the incipient stage. After a time, however, more intensely poisonous substances must be developed, which are not yet isolated and studied. Some of them appear to possess the characteristic toxic effects of muscarine (the alkaloid of the poison-mushroom).—*Ber. d. Deutsch. Chem. Ges.*

Note.—Choline is also known as bilineurine or sinkaline. It is formed when an aqueous solution of trimethylamine $[N(CH_3)_3]$, is mixed with ethene oxide $[C_2H_4O]$. When pure, it is a colorless crystalline mass very soluble in water. By appropriate treatment it may be converted into neurine, a derivative of the lecithine of the brain.

Resinified Essential Oils, which have acquired a disagreeable odor by long keeping and exposure to air, may sometimes be restored to a fairly normal condition by shaking them with a small quantity of a paste made from borax, animal charcoal and water, separating the clear oil and re-distilling.—*Rundschau.*

Mineral Acids in Solid Form.

THE danger which is connected with the carrying of liquid mineral acids to any distance, and the high freight expense it involves, have induced Dr. H. Grüneberg to look for a method of putting these acids in solid form, so as to make them more easily transportable, and to do away altogether with the risk of the danger of breakage. Thus English sulphuric acid used by the petroleum refineries of Roumania was advantageously replaced by solid anhydride. It was also tried to make liquid acids to be absorbed by porous indifferent bodies. Kieselguhr (infusorial earth), which is found in almost inexhaustible quantities in Lüneburg, was found to be the substance most adapted to absorb and retain mineral acids in quantities relatively considerable. After being deprived, by drying, of about fifteen per cent of moisture which it contains on the average, kieselguhr can absorb from three to four times of its weight of sulphuric acid at 66°, and twice its weight of muriatic acid at 20° B, and nitric acid of 36°. No difficulty is found in the operation. The silicious earth is dried and pressed through sieves, then taken into a shallow wood, iron, or stone vessel, and the acid is added in a thin stream. The mixture is well agitated, and the lumps which at first form are broken up. The apparatus now used for the manufacture of superphosphates can be used for this process. The obtained product may be sifted. The sulphuric acid thus changed into solid forms attracts moisture very quickly, and has to be therefore packed at once. For packing, lead-lined sheet iron vessels can also be used, which are covered internally with a layer of gum lac.

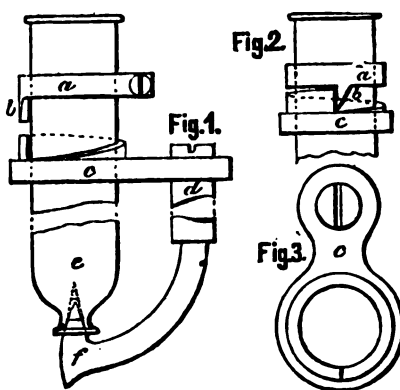
Sulphuric acid solidified as above can find application in the form of a dry powder in several branches of industry, such as the refining of petroleum, or of the fat oils, in the manufacture of dynamite, in stearine works, in the manufacture of carbonic acid for aerated waters (it is exported in large quantities to India for this purpose), in the manufacture of superphosphates, and of sulphate of ammonia, etc. In these cases the acid powder is put into direct contact with the substance to be treated, such as raw petroleum, glycerin, powdered phosphate, carbonate of lime, etc., and is then diluted by the addition of water to the degree of concentration required for the operation. In those cases in which only the acid in the liquid state can be employed, such as for metal, ores, etc., the acid can be previously liquefied by being placed together with water in lead-lined tanks, the remaining powder being then separated from the liquid by means of filter presses.

The high cost of transportation of the liquid acids may render the application of this solidified product convenient in far distant countries.—*Scien. Am. Suppl.*

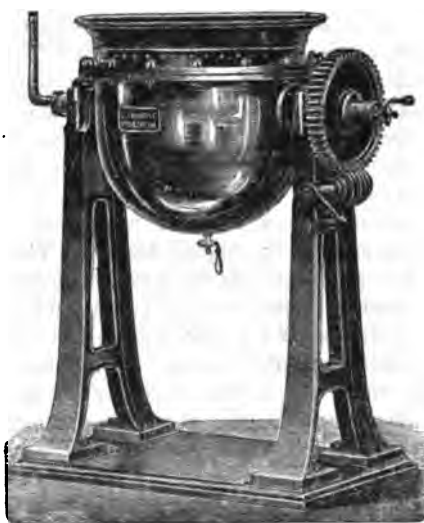
IMPROVEMENTS IN BURETTES.

A NOVEL method of controlling the rate of flow of a test-liquid from a burette is shown in the accompanying illustration (Figs. 1 to 3), only the upper and lower portions of the burette being shown, and the burette stand being omitted. With the burette holder is connected a brass rod, *d*, which may be raised or lowered at will, and which holds the upper part of the burette by means of a guide-plate (Fig. 1, *c*; also Fig. 3), and at its lower portion is connected with a piece of glass rod *f*, the upper point of which fits perfectly true into the lower opening of the burette, the lower point being slightly drawn out to

facilitate the dropping of the test-liquid. In the first burettes constructed on this plan, which was originated by John Greiner, of Munich, the upper point of the glass tube, intended to go inside of the orifice of the burette, was made too short (shown by the straight line across); recently the point is made longer, as shown by the dotted lines. A collar *a* is fastened to the burette above the guide-plate in such a manner that the projection *b* is in contact (or nearly so) with the plate *c* (see Fig. 2), and at the same time the glass tube *f* must



close the lower orifice hermetically. On now slightly turning the ring *a* holding burette, the point of the projection *b* travels gently upward along the inclined plane of the guide-plate (see Fig. 2), and the burette thereby becomes slightly raised from its glass-stopper *f*, whereupon more or less of the liquid will flow from it. The inclined plane carried by the guide-plate should ascend, at least in its initial portion, only very gradually, to permit the fine adjustment of the flow of liquid.—*Chem. Centralbl.*



AN IMPROVED STEAM-KETTLE.

G. J. MUELLER of Pforzheim, Germany, is the inventor and manufacturer of an improved form of copper steam-kettle, that has been in use for some time. Its advantage is that it may be turned by means of the endless screw, worked by a winch, so as to be at any desired angle of inclination, at which angle it remains until the winch is turned again. The steam enters through one of the axles supporting the kettle, and the waste-water either passes out through the other or may be let off from the pet-cock below. A kettle of this construction is, of course, much easier to be emptied of its contents, and to be cleaned. It has a decided advantage over those which have an outlet for the contents at the bottom, although for very large-sized kettles this is probably the only feasible plan.

To Hasten the Deposition of Precipitates.

WHITTEL has found that the addition of a few drops of chloroform causes the immediate deposition of chloride of silver in the liquid in which it has been precipitated. Its influence, of course, is purely mechanical. It may be used to advantage and for the same purpose also in other cases.

A Compound Indicator for Acids and Alkalies.

A MIXTURE of an alcoholic solution of phenolphthalein with dimethylaniline orange is recommended as indicator in alkalimetry or acidimetry. The mixture is lemon-yellow when quite neutral, whilst when acid it is rose-red; when alkaline, deep-red.—A. GAWALOWSKI in *Bied. Centralbl.*

Valuation of Calcium Tartrate.

FIVE grains of the finely-powdered substance are heated with 30 C.c. of a ten per cent potassium carbonate solution for two hours, the solution is filtered, concentrated to 5 C.c., and mixed with an equal amount of strong acetic acid, and 100 C.c. of 90 per cent alcohol. After a few hours' standing, the hydrogen potassium tartrate is separated, washed with alcohol, and titrated with standard alkali.

If calcium carbonate is present at the same time, and this has to be estimated, ordinary volumetric methods cannot be employed, and the carbonic acid has to be determined directly by Scheibler's apparatus or some similar method.—L. WEIGERT in *Zeitsch. f. Anal. Chem.*, 1884, 357.

Atomic Weight of Bismuth.

UP to the year 1851, the atomic weight of bismuth was assumed to be 213, which figure was derived from experiments made by Lagerhjelm. In 1859, Dumas obtained as the mean of very careful experiments, the value 210.46, since which time the figure 210 was generally adopted as the atomic weight (so also in the last U. S. Pharm.). In 1883, Marignac re-examined the subject with great care and minuteness, and obtained as a mean result (which he, however, himself declares to be not quite exact enough) the value 208.6. Finally Löwe as well as Schneider have recently obtained figures very close to 208. Hence it may be concluded that the latter is much nearer to the truth than 210.

Sulphur Soap.

A CORRESPONDENT of the *Seifenfabrikant* recommends to prepare an efficient and homogeneous sulphur soap in the following manner:

Grind or rasp very dry "ground-soap," that is such soap which is prepared from best fresh fats, and in which the whole of the latter is saponified [a dried quantity of Conti's white Castile soap will answer very well], and add to it the requisite quantity of sulphur dissolved in linseed oil. To prevent the mixture from becoming semi-liquid, add to it enough powdered orris root, which serves at the same time as perfume, and potato flour, to impart to it the requisite consistence. The grinding and rasping is best performed by the regular machines of the soap manufacturer, and the finished mass should also be passed through the machine, after which it may be formed in suitable pieces. If no machine is available, the mixture may be prepared in an ordinary mortar and afterward formed by hand.

THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 3. WHOLE No. 129.

FRED'K A. CASTLE, M.D., - EDITOR.

CHAS. RICE, PH.D., ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

MARCH, 1885.

SUBSCRIPTION PRICE per year, \$1.00
SINGLE COPIES, 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & CO., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

THE CAMPION plan has not found the support which its success demanded, and has been practically abandoned by the manufacturers and wholesale dealers, so that now the retail dealer finds himself at the point where he set out two years ago, viz., dependent upon his own skill, business tact, and capital for his commercial security and success. There is, indeed, some doubt as to whether he is as well off as before this movement began, for after all that has been said in advertisements of prominent cutters and in the secular prints about the "ring" prices, the public, more than ever before, is inclined to be critical and to drive a sharp bargain in the purchase of the apothecary's wares.

As an offset to the last-mentioned condition, there is a possibility that the general discussion of the subject may have the effect of discouraging some young men from engaging in a business in which competition is so active, the profits so small, and the legal and

commercial restrictions of such increasing severity.

In considering the relations of the retail pharmacist to the jobbing trade, it may be well to take into account the custom which is said to be growing in some localities, of jobbers and manufacturers of proprietary goods furnishing the capital with which the retail establishments are conducted. In just so far as this condition of affairs exists, is it useless to attempt any action calculated to advance the interest of the retailer, as opposed to those of the wholesale dealer. It is quite impossible that such a complication as this can have so retarded the growth of the National Retail Druggists' Association, but is there not ground for a belief that it has had some influence?

This phase of the retail trade is not yet as pronounced in the case of the pharmacists as in that of some other callings, but there is reason for thinking that it is increasing in importance, and that no inconsiderable amount of the competition and loss of custom from which the old and well established stores are now suffering, is owing to the opening of stores in their neighborhood with capital furnished by the very jobber, it may be, of whom they are procuring their own supplies. Such an arrangement may result in competition with an establishment which, practically, has facilities for purchasing goods on better terms, and is able to sell at lower rates than the independent dealer.

It is said that the recent effort of the Excise Commissioners of New York City to exact of apothecaries a liquor dealer's license was a consequence of the efforts being made to oblige the liquor-dealers to comply with the Sunday-closing law, and to pay, themselves, for a license, and was instigated by the liquor-dealers. There is now little probability of such a measure being enforced; but in view of the results which might have followed if apothecaries had been obliged to fight the liquor-dealers with their own methods, the humorous illustration copied from the *Weekly Drug News*, on page 60, will clearly show the odds to be greatly in favor of the former.

If the liquor-dealer is wise he will leave the affairs of the apothecary alone, for his competing neighbor has every advantage of him in the way of "chromo," and the corned-beef and cracker-bowl of the free-lunch counter would stand but a sorry chance beside the confections of the pharmaceutical laboratory.

THE Sixth International Pharmaceutical Congress will meet at Brussels August 31st, 1885, and will last until September 6th. We have been requested by the Committee of Organization, of which Dr. D. A. Van Bastelaer is President, to bring this notice to the attention of the pharmaceutical profession. Reserving further details for a later

occasion we have only time now to give a summary of the subjects proposed to be laid before the Congress:

The Congress will group all questions that may be submitted into four sections.

1. Professional questions.
2. Questions relating to theoretical or practical pharmacy.
3. Questions referring to chemistry in its relation to hygiene and public health.
4. Questions relating to general, applied, biological, or legal chemistry.

Four subjects will be laid before the Congress by the Committee of Organization for the purpose of being discussed in the full meeting:

1. The plan of a universal pharmacopœia worked out by the committee appointed since the last Congress of London.
2. Pharmaceutical education; preliminary requirements or education; character and standard of scientific studies, etc.
3. Adulteration of articles of consumption; legislation, etc., relating to the same.
4. Drinking water: its characters and tests.

THE bill appropriating \$200,000 for building a fire-proof structure for the safe-keeping and preservation of the books, records and other possessions of the Medical Library and Museum belonging to the Surgeon-General's office, passed the House of Representatives on the 16th of February. The books, pamphlets, and manuscripts belonging to this library, it is said, form the largest and most valuable collection of medical and surgical literature in existence. The Museum, like the Library, is said to be unexcelled in extent or value by any like collection in the world. In the Surgeon-General's office are deposited the Surgical and Hospital records of the Union armies. These are in constant use as evidence in adjusting pension claims. Duplicates of them do not exist, and their destruction would entail an irreparable loss upon thousands of pension claimants as well as upon the Government.

All the collections are now kept in the building formerly known as Ford's Theatre, in which President Lincoln was assassinated. This structure is a fire trap, and it is surrounded by old buildings dry as tinder.—*Tribune*.

A CRIMINAL charge of forgery of examination papers has been lately brought by the Ontario College of Pharmacy against a person, who fraudulently presented himself as a certain W. Harron, of Millbank, who had applied to the registrar for examination under the pharmacy law, and who had been notified to appear for examination on the appointed day. The impersonator of Harron was recognized by the registrar as Charles A. Krick, lately attending one of the medical schools. He was subsequently arrested and brought before a magistrate, who referred the case to the Grand Jury, which has since then brought in a true bill.

This will teach all the Examining Boards of Pharmacy a lesson, for as business seems to have been formerly conducted by more than one of them, the possibility of fraudulent personification had by no means been totally excluded.

The Best Fusing Agent for Silicates.

HOLTHOFF recommends for this purpose the bicarbonate of sodium, in quantity of 12 to 15 times the amount of the silicate. Both the latter and the bicarbonate (the pure crystallized form) must be very finely powdered. One-fourth of the bicarbonate is first put in to the platinum crucible. Another fourth, or rather more, is intimately mixed with the silicate in a warmed capsule, and this mixture further mixed with another fourth upon glazed paper, when it is transferred into the crucible. The last fourth is used for rinsing the capsule and paper and placed on top of the whole mixture in the crucible, which should not be much more than half full. At first only the bottom of the latter should be carefully heated, then the heat is gradually increased during 15 minutes, until the lower half of the crucible is at a low red heat, without allowing the mass to melt. Finally, the heat is raised, if necessary, with the blast lamp. When the mass is in a quiet flow, without evolving any more gas, the operation is finished.—*Zeitsch. Anal. Chem. and Chem. News.*

The Noyau, or Noyeau, Vine or Plant: *Ipomoea sinuata*, Ortega.

FOR several years past, when driving through Colombo with any stranger, I scarcely lost an opportunity of attracting attention to a very common and abundant exotic climber which grows everywhere here, and often covering fences and small houses with a mass of dissected green leaves and large white flowers with cerise centres and one of the best quick-growing plants to cover an arbor or to conceal small outhouses. I attract particular attention to this plant by pulling some of its leaves, crushing them between the fingers and then presenting them to my friends, and asking them what the odor reminds them of, when the reply is variously given as "noyau," "cherry pie," "heliotrope," "prussic acid," or "bitter almonds." My reply is: "This is the noyau plant, and this is a practical lesson in botany."

Although the plant is alluded to in several works on botany as producing noyau, I had not noted the fact until Mrs. O'Brien, the wife of General O'Brien, attracted my attention to it at Bray Crooke Hall, saying: "This is what we call the noyau plant in the West Indies, at the same time giving me the lesson of crushing the leaves, which I have not forgotten, and which I now have the pleasure of recording for the benefit of the readers of the *Ceylon Observer* and of the *Tropical Agriculturist*."

What the liqueur sold as noyau is really composed of is as doubtful as the composition of most other liqueurs, judging by the various accounts, some of which I here give; but that noyau, pure and simple, is manufactured from the *Ipomoea sinuata* Ortega is distinctly recorded, and from no other source, as far as my information goes. Noyau appears to be a liqueur flavored by several vegetable products, and this is about all the information which I can find in all the books I can refer to in Colombo.

The *Ipomoea sinuata*, from which noyau is said to be made, was originally a native of Georgia and Florida, but was introduced many years ago to Asia from tropical America, and is now found in N. W. India, Hindostan, Bengal and Ceylon, and is cosmopolitan in the tropics. It is properly the *Ipomoea sinuata* of Ortega, and has been described as *Convolvulus dissectus*, Linn., *Ipomoea dissecta*, Choisy, and has been figured by Jacquin, Hort. Vindob., ii., 74, t. 159, and is described by C. B. Clarke in the "Flora of British India" (vol. iv., p. 214), in Baker's

"Flora of Mauritius" (p. 207), and Don's "Gard. Dict.," iv. (p. 297).

As stated above, it is a most common plant in Colombo, and to persons going into the fort through Slave Island, I may call their attention to a plant of it which, some weeks ago, covered the entire roof of the last house on the right hand side (before crossing the railway) of the married quarters of the non-commissioned officers of the Royal Artillery; but since the south-west monsoon has set in, this plant is somewhat curtailed in its dimensions. It was introduced to Ceylon before 1824, according to Moon's "Cat. Ceylon Plants" (p. 13).

The following are the extracts referred to above: *Convolvulus dissectus* abounds in prussic acid, and is one of the plants from which the liqueur noyau is prepared. Bot. Mag., 3, 141; Lindley's "Vegetable Kingdom," p. 631. The kernel of *Cerasus occidentalis* is used for flavoring the liqueur noyau. Lindley, l. c., p. 558. *Ipomoea sinuata* Ortega, the noyau vine.—Schomburgk's "Barbadoes," p. 612, No. 655. The statement in Eng. "Cyc. Nat. Hist.," ii., p. 130, that noyau is got from *Ipomoea pandurata* is a mistake. *Convolvulus dissectus* abounds in hydrocyanic acid, and is said to be one of the plants from which the liqueur noyau is prepared.—Maudslayi's "Treasury of Botany," i., p. 326.

Noyau (Fr.) a liqueur flavored with the kernels of *Cerasus occidentalis*; it is also said to be sometimes prepared from *Convolvulus dissectus*—Maudslayi, l. c., ii., p. 794. The kernels of species of *Cerasus* impart flavor to noyau, ratifia, cherry brandy, and maraschino.—Balfour's "Class Book of Botany," p. 806.

Noyau, a rich cordial, flavored with the kernels of the nuts of bitter almonds, or of peach stones, "Imperial Lexicon," ii., p. 140.

Noyau, a name in France of a liqueur said to be prepared from the kernels of *Cerasus occidentalis*, a tree of the plum family, native of Jamaica, where it is called laurel. It is more than probable that the kernels of the common cherry are also used in the preparation of noyau, and it is said that a species of *Convolvulus* (*C. dissectus*) furnishes material from which the liqueur is made. Noyau is chiefly used for flavoring confectionery. Smith's "Dictionary of Names of Common Plants," p. 289.

To Dr. Trimen I am indebted for the following extract from the *Botanical Magazine*, which shows that the *Cerasus sphenocarpa* is the noyau cherry of the West Indies, which in some way, not known to me, has got mixed up in this respect with the *Cerasus occidentalis*. "In the preparation of noyau probably several different vegetables are employed which contain prussic acid. A species of bindweed, the *Convolvulus dissectus*, abounds in prussic acid, and to that degree, as Dr. Nicholson of Antigua informed me, that "if this medicine shall be found deserving the high character which some physicians have bestowed upon it, it may become valuable in a country where this prussic acid cannot be preserved many days in a pure state. Hence this is a frequent ingredient in the preparation of noyau."—Hook., in *Botanical Magazine*, t. 3141, *Cerasus sphenocarpa*, Noyau cherry of West Indies.

From plants of the *Ipomoea sinuata* growing on fences in Union Place, the following notes are given: Stems, petioles, and lower parts of peduncles covered with long hairs; leaves palmate, glabrous or nearly so, cut down nearly to the centre into seven lanceolate, deeply toothed or pinnatifid lobes; peduncles one to four flowered, and with the flowers together about the same length as the leaves; sepals elliptic, oblong, obtuse with a minute cusp, glabrous, fleshy, inflated before

the fruits are ripe, then papery and spreading; flowers white, shallow funnel-shaped about two inches across, capsule about half inch in diameter, glabrous, two-celled, normally four-seeded, inflated and divided into four parts; seeds black, glossy, smooth. The flowers begin to open about 10 A.M. in Colombo, and are open nearly the rest of the day.—*Weekly Ceylon Observer*; *Pharm. Journ.*

Pure Calcium Hydro-Sulphide.

THOUGH pure calcium hydro-sulphide has often been referred to by writers, and apparently been obtained by several investigators, yet it has remained unknown until now except in dilute solution.

Böttger's directions for preparing hydro-sulphide of calcium as a depilatory, which are copied into many works on chemistry and pharmacy, are misleading, as, according to them, hydrogen sulphide is to be passed into thin milk of lime until the mass acquired a bluish-gray color. The production of this color is due to the formation of ferrous sulphide, and this must take place as soon as any soluble sulphide is present, and, therefore, before any quantity of lime has been acted on by the hydrogen sulphide. As to the mass thus obtained, which is to be smeared upon hides as a depilatory, the little true hydro-sulphide in it is in solution in the liquid part of it.

Only recently Dr. Edward Divers and Mr. Tetsukichi Shimudzu, of Tokio, have succeeded in obtaining the hydro-sulphide in crystals. As it is not unlikely that the substance will yet find employment in medicine, we will give their mode of preparation (from *Jour. Chem. Soc.* 1884, July), in their own words:

Nothing can be simpler in the abstract than the preparation of calcium hydro-sulphide, consisting, as it does, in treating calcium-hydroxide with hydrogen sulphide in presence of a sufficiently small quantity of cold water, and then crystallizing the solution. But the details of the process require much attention, and this fact probably explains how it is that the hydro-sulphide has not hitherto been obtained. The difficulties of its preparation depend upon its instability and exceeding solubility in water.

If hydrogen sulphide is forced through a semi-solid mass of calcium hydroxide and water, the whole will become liquefied and increased in volume. To this clear solution much lime has still to be added, and dissolved by hydrogen sulphide, before a saturated solution is obtained. This lime might be added as hydroxide, but it is practically requisite to use the oxide, as, unless the hydroxide were dry, too much water would be yielded by it, and if it were not in fine powder troublesome lumps would form from it, and the operations of drying and pulverizing thus required, would probably be attended with carbonatization by the atmosphere. Quicklime prepared from precipitated calcium carbonate is almost necessary for preparing the hydro-sulphide.

The preparation of a crystallizing solution of calcium hydro-sulphide takes days to complete, and all through the process air must of course be excluded. In hot weather it is hardly possible to prepare it without cooling down, and at all seasons cooling with snow or ice facilitates the process.

The lime we used was made by igniting, in platinum crucibles, calcium carbonate which had been precipitated from an alkaline alcoholic solution so fused calcium chloride. It was always found free from sulphate and carbonate, but was never so pure as to dissolve in the large proportions required without leaving some small residue. We believe, indeed, that dissolution to

saturation by hydrogen sulphide will be found a more delicate wet test of the purity of lime than any other.

We tried hydrogen sulphide prepared from several sources, but ended by using the ordinary gas from iron sulphide, washed, and filtered through a column of cotton, and sometimes dried with calcium chloride.

The vessels we finally employed for making crystallizing solutions were formed out of tubing, 18-20 mm. in diameter. The body of the tube was about 1½ decimetres in length, and ended in long drawn-out limbs of about 5 mm. in diamter. One of these was bent acutely just beyond its origin in the main part of the tube. The tube being fixed in a nearly vertical position, with its bent limb below, the gas could be sent through the limb up from the very bottom of the liquid, and thus made to keep the undissolved lime well agitated. Occasionally when working with almost finished solutions, a stout platinum wire was, without stopping the current of gas, pushed down the upper straight limb of the tube into the solution to detach adhering matters. Except at these moments, and when adding more lime, the exit-tube was always in connection with a wash-bottle, serving as a guard against the entrance of air.

Before setting the solution to crystallize, it had to be left to clarify by the subsidence of excess of lime and the impurities always present in small quantities. It had then to be decanted into a crystallizing tube. This was done in a stream of hydrogen sulphide, after the tube had been turned to the horizontal position to avoid bubbling of the gas and disturbance of the sediment. The two tubes were connected by black rubber tubing during the decantation. The mouths of the crystallizing tube were afterwards closed by caoutchouc caps coated with paraffin, but, except for the few moments occupied in transferring, the solution touched glass only.

In order to prepare a solution of the necessary concentration, between two and three parts only of water must be used with one of calcium oxide. But as large a proportion as that may be added, and yet through evaporation from the hot mass, nearly dry calcium hydroxide be obtained. Evidently, therefore, the addition of this amount of lime to the water must be made gradually. To start with, one part of lime, dropped into somewhat less than four parts of hot water, gives, from the purity and fine division of the lime, about the stiffest paste of hydroxide that can be worked with. The mixing must be done in the preparation-tube itself. Thin milk of lime may be used instead, but in that case a larger quantity of lime will have to be added afterwards. In the thick paste dissolution of the hydroxide proceeds, with evolution of heat and with comparative rapidity, along the channels which the hydrogen sulphide works out for itself in forcing its way through the paste.

Admixture of the undissolved mass of the hydroxide with the concentrated solution thus formed, is attended with evolution of heat, and the replacement of hydroxide by so abundant a crystalline precipitate of hydrated sulphide as to render the whole very thick again.

Dissolution of the first quantity of lime having become complete, fresh lime is added to the clear, thin liquid. The lime reacts more mildly with the solution than with simple water. If very well agitated, the lime passes gradually into a slimy matter, consisting probably of very fine crystals, before it passes into solution. Often, however, some crystalline lumps form, which, however, very slowly, even if left at rest, break down into the slimy matter. When calcite-lime is used, hard crystalline masses generally form, which are afterwards practically

irreducible, so that such dense lime is hardly to be used successfully. The lime dissolves best when added gradually, and is then less likely to choke up the tube with hard crystalline sulphide. We have found it necessary to make additions of lime about four times, in order to reach the point of saturation, and leave some excess in proof of having done so. We have already described the decantation of the formed solution from this excess and the small unavoidable impurities.

If the liquid is kept cold during the passage of the gas, in order to favor reaction, crystals of the hydrosulphide at last form in abundance; but this is not the case at ordinary temperatures. Saturation to the crystallizing point being reached, the current of gas is stopped, and the liquid left in the tube to clarify, very carefully sealed up, at the ordinary, or a slightly warm temperature, in order that most of the crystals which may have formed in the cold shall redissolve. After decantation, the clear solution is again kept in ice, when it crystallizes, and the more abundantly the better it has been saturated at a low temperature.

The calcium hydro-sulphide thus obtained is separated from its mother-liquor by draining and blowing a current of hydrogen sulphide through the mass of crystals, the tube being all the while immersed in snow. They cannot be removed from an atmosphere of hydrogen sulphide without undergoing change, and admit therefore of no further drying, except by a momentary swinging of the tube to expel adhering liquid centrifugally. In warm weather, the crystals evolve hydrogen sulphide even in an atmosphere consisting of that gas.

Zinc in Drinking Water.

THE increase in the use of galvanized iron, especially in the form of water tanks and pipes, has led to a reopening of the question as to the possible injurious effects from the use of such water. It is a matter of importance, then, to us how far our knowledge extends on this subject, and I will collect here all of the known facts, so far as I have been able to get at them.

The so-called galvanized iron is, of course, nothing more than iron dipped in a bath of zinc and so superficially coated with it and, to a certain extent, alloyed with it. The character of the protection afforded the iron is galvanic (hence the name), the two metals forming a galvanic couple, so that under the action of any exciting liquid, the zinc and not the iron is attacked. That zinc dissolves in potable waters has long since been shown by the experiments of Boutigny, Schaeffele and Langonné. Distilled water and rain water dissolve it more readily than hard water. Especially is water containing carbonic acid capable of this solvent action. So much may be taken up that the water becomes opalescent and acquires a distinctly metallic taste. It seems that by the action of water, hydrate and carbonate of zinc are gradually formed, and that this action is more rapid in the presence of certain saline matters, but is weakened by the presence of calcium salts.

As to the injurious effect of such waters, authorities differ. Fonnagives has investigated the question, consulting the statistics of the French navy and the recorded experiments of others, adding, however, none of his own. The French Government had, before this, appointed a committee to make a special report on the subject, and the investigations of Roux in 1865 and 1866 furnished evidence enough of possible injury to health from water stored in galvanized iron tanks to lead to an order from the Minister of

Marine prohibiting the use of such tanks on board ships of war. Boutigny attributed grave effects to the use of these zinc-containing waters, looking upon it as probably resulting in epilepsy. Fonnagives, however, maintains that the zinc is not cumulative and produces no bad effects unless taken in large doses. Doubt is thrown on this position, however, by the fact that his assertions as to the limited solubility of zinc in ordinary drinking water are not sustained by experiments. Without doubt such waters have been used for considerable length of time and no injurious effects have been noticed. This may have been due, however, to the hardness of the water, and hence the small amount of zinc dissolved. Pappenheim states in contradiction to the assertion of Fonnagives that zinc vessels are dangerous and must be carefully avoided. Dr. Osborne, of Bitterne, has frequently observed injurious effects from the use of waters impregnated with zinc. Dr. Stevenson* has noticed the solvent action of rain water on galvanized iron, and states that probably its continued use would cause injury to health. He recommends as a convenient test for the presence of zinc in potable waters, the addition of potassium ferrocyanide to the filtered and acidulated water. Zinc gives a faint white cloud or a heavier precipitate when more is present. Dr. Frankland† mentions a case of zinc poisoning where well water, containing much dissolved oxygen and but little carbonic acid, was used after passing through galvanized iron pipes. Prof. Heaton‡ has recorded the analysis of spring water in Wales, and a second analysis of the same water after passing through half a mile of galvanized iron pipe, showing that the water had taken up 6.41 grains of zinc carbonate per gallon.

A similar instance of zinc-impregnated water has come under my own observation, and I append the analytical results. The water from a spring 200 yards distant was brought by galvanized iron pipes to a dwelling-house and there stored in a zinc-lined tank which was painted with white lead. The water became somewhat turbid and metallic-tasting, and its use for drinking purposes was discontinued. Analyses were made after the pipes had been in use about one year. A somewhat full analysis of the spring water was made under my direction by Mr. J. C. Roberts. The analyses of water from the tank and directly from the pipe, I carried out only so far as zinc, iron, and tests for lead were concerned. The results are calculated in grains per gallon of 231 cu. in.:

Constituents of the water:

Silica.....	2.45 grains.
Lime.....	.23 "
Magnesia.....	.17 "
Alkalies.....	.43 "
Chlorine.....	.35 "
Sulphuric acid....	.19 "
Carbon dioxide (calculated).....	.45 "
Total residue on evaporation....	4.34 "

The tank contained 4.48 grains of zinc carbonate per gallon, with a trace of iron and no lead. Water from the pipe gave 4.29 grains of zinc carbonate per gallon and a trace of iron.

It is evident then, when the dangerous nature of zinc as a poison is taken into consideration, that the use of zinc-coated vessels in connection with water or any food-liquid should be avoided.—F. P. VENABLE, PH.D., in *Journ. Am. Chem. Soc.*, vi., 214.

* Chem. News, 49, 107.

† Chem. News, 49, 115.

‡ Chem. News, 49, 85.

Magnesium Hydro-Sulphide.

HYDROGEN sulphide obtained from ordinary iron sulphide, and either sulphuric or hydrochloric acid, is passed into a large flask half or two-thirds full of water, holding magnesia suspended. If the magnesia happens to be carbonated, as is usual in its commercial forms, this matters little, although freshly-calined magnesia is preferable, as being more easily dissolved. The proportion of magnesia to water must not be too great, one part of commercial impure oxide in ten parts of water being near the limit. An excess of magnesia seems to prevent the formation of such a concentrated solution as can be obtained when the proper quantity is not exceeded. The magnesia slowly dissolves in the stream of gas, much of which, it is hardly necessary to state, passes away unabsorbed. Where, therefore, as in most laboratories, hydrogen sulphide gas is in nearly constant use, the flask of magnesia may conveniently be interposed between the generator and such solutions as require treatment with the gas. When the solution has been prepared, the flask can be corked to exclude air, or at once used if wanted. It may be preserved unchanged for any time by sealing over the cork with wax or paraffin. Magnesium hydro-sulphide solution may also be prepared, of course, as in the magnesia method of sulphur recovery by the reaction between calcium sulphide and magnesium chloride; but for laboratory purposes such a method presents no advantages.

Some Properties of Magnesium Hydro-sulphide Solution.

A solution made to contain 4.35 per cent of magnesium, equal to 16.31 per cent of magnesium hydro-sulphide, $Mg S_2 H_2$, may serve to represent what will usually be obtained by proceeding as above directed. Its sp. gr. was 1.118 at 12°. Such a solution is capable of yielding 12 per cent of hydrogen sulphide by weight, and readily in practice about 10 per cent, the amount varying according to circumstances.

The solution, when the impurities of the magnesia have settled down, is nearly colorless, its slight color being due to poly-sulphide formed by the action of ferric oxide in the magnesia or of air. Exposed to the air, or heated to about 60° in a flask with delivery-tube, it gives off hydrogen sulphide. But exposure to air also results in oxidation of the hydro-sulphide and thiosulphate. However in a solution left at rest, oxidation is much impeded by the formation of a firm, colorless, transparent, amorphous film on the surface of the liquid, consisting apparently of magnesium hydroxide, but possibly hydroxyhydro-sulphide, $Mg SH.OH$. The solution does not readily, if at all, absorb carbon dioxide from the atmosphere in the early stage of its decomposition.

With regard to the effect of heat, already mentioned, a temperature of 60-65° gives a steady evolution of hydrogen sulphide for some time, and this can be maintained for a considerable time longer by raising the temperature to 90-100°. As hydrogen sulphide escapes, magnesium hydroxide separates out in the solid state. These facts are now well known in connection with the process of sulphur-recovery. The poly-(penta?) sulphide that may be in solution is only very slightly decomposed even at a boiling heat, but in so far as it is, it yields hydrogen sulphide, solid sulphur, and magnesia. The yellow poly-sulphide is, however, readily decomposed by hydrogen sulphide, the products being magnesium hydro-sulphide and sulphur. It is hardly necessary to add that magnesium hydro-sulphide will decompose with

an acid, and may thus be made if desired to yield its hydrogen sulphide like calcium, barium, iron, and other sulphides.

Employment of the solution as a source of Hydrogen Sulphide free from Arsenic.

The mode of employing it will be obvious. The flask containing it, provided with a simple delivery-tube, and without washing-bottle, is to be heated, best on a water-bath, to the extent necessary to secure a steady stream of gas. It may often be an advantage to make the following arrangement: put the solution to be treated with the gas into a flask or bottle fitted with cork and gas entry tube, and connect its tube with the delivery-tube of the generator. Keeping the test-flask slightly open, warm the generator until the air is entirely expelled from both flasks, and then close the test-flask tight. The generator being kept warm, the hydrogen sulphide may be sent over into the solution under treatment without waste and without access of air. The level of the liquid in the tube of the test-flask will guide the operator in heating the generator. The gas being unmixd with hydrogen will be absorbed much faster than it is commonly seen to be, and with such an arrangement some little attention is necessary, or the solution may be carried over into the generator through the reabsorption of the gas by the magnesia, should this from any cause be allowed to cool a little.

The evolution of hydrogen sulphide from the magnesium salt by heat has advantages over that by the addition of acids to alkaline earth and other sulphides; firstly, in being steady and under perfect control, and, secondly, in yielding the gas free from any other active or inactive, except a little water-vapor, free from the spray which effervescence by acids causes and in no need therefore of any washing.

When the magnesium solution has been used until nearly exhausted, it has only to be placed again, when cold, in a current of ordinary hydrogen sulphide to be restored nearly or fully to its first strength as a source of this gas. Magnesium hydroxide, carbonate, and poly-sulphide will all thus be converted to hydro-sulphide, and only the little thiosulphate remain unchanged.

After using many times, or after much accidental exposure to the air, the contents can be replaced with fresh magnesia and water with but little cost or trouble.

Manufacture of Aluminum.

HERETOFORE aluminum has always been made by treating its chloride with metallic sodium as a reducing agent. But the great trouble in handling this material and its very high cost have made such a process difficult and expensive—the price of aluminum at present being higher per ounce troy than silver. This has limited its uses and its manufacture in commercial quantities to the sole factory in Paris, France.

William Frishmuth, a German chemist, living in Philadelphia, and a pupil of Wöhler, who discovered aluminum, has been working for twenty-eight (28) years to solve the problem of making cheap aluminum in commercial quantities. Within the past few years he has discovered and secured patents throughout most of the civilized world, for a process that now produces aluminum in a commercial way at one-third the cost of any other, with almost a certainty of being reduced to \$1.25 per pound avoirdupois, when worked in a large plant, with proper technical and practical management, ample capital and

perfected mechanical and chemical means. Instead of using metallic sodium, as before mentioned, he uses a vapor, produced or generated in a suitable vessel from a mixture of sodium carbonate, or other suitable compound of sodium, and carbon or other reducing agent. And this sodium vapor, not metallic sodium, as used in the Deville process, is made to react in various ways upon the aluminous materials to produce aluminum. Therefore the economy of the Frishmuth process is about as follows, estimated for illustration on a theoretical basis. The manufacture of 20 pounds of aluminum requires 115 pounds of sodium carbonate, at a cent a pound, or 50 pounds metallic sodium at from \$2.50 to \$3.50 a pound. Therefore one pound of aluminum requires, by the Deville process, 2½ pounds metallic sodium, costing from \$6.25 to \$8.75; or by the Frishmuth process, 6 pounds sodium carbonate, costing say 6 cents. Practical operations are said to increase the quantities by the Deville process to from 3 to 4 pounds of metallic sodium, and by the Frishmuth process to say 12 pounds sodium carbonate.

Both Deville and Frishmuth have to use the double chloride of aluminum and sodium, although Frishmuth has a patent for his successful use of the double fluoride of aluminum and sodium in making aluminum. This is another great item of cost in making this metal. But Frishmuth has made improvements in making the double chloride of aluminum and sodium that reduce its cost to a few cents a pound, and consequently that of the metal. As this double chloride is the cheapest of a few known chemical substances used in making aluminum cheaply and in commercial quantities by chemical or electrical processes, the saving in cost, through such discovery by Frishmuth, in making this metal, will be very great, and almost as much as by the use of his sodium mixture in place of metallic sodium.

On account of the use of sodium and chloride, the wear and tear on retorts, crucibles, and apparatus is usually great. But in the apparatus now used in Philadelphia, designed by Frishmuth, this item of cost is much reduced, and will be further reduced when heated by Wilson produced gas instead of coke.

The metal is superior in quality to the French, being purer and whiter. Its specific gravity is 2.73. It has been tested in New York, London, and Paris, in a commercial way, and can be sold at the market price. All manufacture has been in the experimental and developing way, and Frishmuth has sold metal thus made to the extent of many thousands of ounces. Recently he made in a few days several ingots of 40 ounces troy each, the quality of which was severely tested.

The use of the metal will increase as the price decreases, and when sold eventually, say at 30 cents an ounce, the consumption here and in Europe should be 120,000 ounces troy a day. It has greatest value as an alloy, especially with silver and copper, as it gives a non-tarnishing and non-corrosive quality to such metals, and greatly increases the tensile strength. Aluminum bronze is made by alloying 10 pounds of aluminum with 90 pounds of copper, and has a tensile strength of three tons per square inch more than Bessemer steel.

Frishmuth has invented a solder for aluminum that welds the metal with itself or with copper, tin, lead, and iron. The color is the same as the metal, and is of great benefit to the arts and industries.—*Scient. Amer.*

Winchester Observatory.—This establishment, connected with Yale College, corrected 6,326 clinical thermometers during the present year.

Nascent Hydrogen Dioxide as a Bleach.

From present appearances, the history of the introduction of chlorine into the bleachery is about to repeat itself in the case of hydrogen dioxide. Chlorine was first used in the form of its solution, in which the fibre or tissue to be bleached was placed. Years passed away before a solution of salt which would yield chlorine was substituted for that of the element itself; but as soon as the substitute was introduced, its superiority was recognized, and the preference for bleaching powder (chlorinated lime) soon became general. As the continuous web of cloth is run through the bleach, and through the acid baths, the chlorine is set free on and among the fibre. Thus applied in the act of being set free, that is to say, in the nascent state, its effect is far more powerful than that of a solution of it, however concentrated, could possibly be.

Is not hydrogen dioxide, now, we believe, used in this country only in solution, destined to undergo a similar revolution in the methods of applying it as a bleach? If effective when thus used, will it not be more so when it is generated in contact with the fibre? The substance from which it is generally prepared, barium dioxide, is colorless, and it has no injurious action on the fibre. The acid or salt used to decompose the barium dioxide, and form the hydrogen dioxide, may be chosen from those which also do no damage either to animal or vegetable tissues. No obstacle, therefore, seems to exist to the extended employment of a substance which the *Textile Record* hailed years ago as "the coming bleach," and which the Brothers Jacobson, of Berlin, have recently been experimenting upon with highly satisfactory results.

Like many other bodies valuable in tinctorial chemistry, hydrogen dioxide labors under the disadvantage of being known by several different names. Some technical journals call it hydrogen peroxide; others reverse this, and say peroxide of hydrogen; others, bin-oxide of hydrogen; others again, oxygenated water; and yet others use the fancy name, or "name to sell," ozonized water. They all mean the same thing, neatly expressed by the chemical formula H_2O_2 .

Manufacturers of hydrogen dioxide for industrial purposes have suffered much inconvenience and loss from its ready decomposition, when being transported, and this property of the compound led to demand for another, which, while equally rich as a source of oxygen, would bear transportation. The barium dioxide, BaO_2 , seemed to fulfill all the indications, and to it the above experimenters turned their attention.

Schoene had shown that barium dioxide in water, alone, undergoes slow decomposition, evolving oxygen. The Brothers Jacobson have demonstrated that the evolution can be increased by the addition of various salts to the water. The most favorable results were obtained with soluble alkaline silicates, sal ammoniac, alkaline borates, or the salts of the fatty acids. Chloride of magnesium and phosphate of soda act less strongly, and sulphates still less.

The proportion of the salt to the water may vary according to circumstances, but the following mixture will serve in most cases.

Barium dioxide..... 1 part
Silicate of soda..... 1 "
Water..... 100 parts

For bleaching vegetable fiber, such as jute, cotton, paper pulp, etc., the solution should be more concentrated, while for animal fiber a larger proportion of the silicate of soda would be disadvantageous because of the alkali

set free. The time required for jute and cotton cloth is from one to two days. The bleaching liquor can be used again as long as barium dioxide remains undecomposed. Materials to be bleached in this way must have been well scoured. The silicate of soda may be first dissolved in water, and the barium dioxide then added, or the two solids may be mixed, and then dissolved together.

Whenever the nature of the objects to be bleached permits, bleaching with barium dioxide in an alkaline solution is preferable, because the hydrogen dioxide formed is more powerfully decolorizing in an alkaline than in an acid or a neutral solution. This is probably owing to the formation of soluble dioxides, which are more easily decomposed than hydrogen dioxide itself.

For certain purposes, as the bleaching of oil, neutral solutions answer better; for example, those obtained by mixing barium dioxide with salts of magnesia.—*Textile Record*.

A New Method of Estimating Nitrogen.

A NEW method for estimating nitrogen in ammonia, which does not require elaborate apparatus, and is free from the many sources of error connected with most other processes, has been proposed by Kjeldahl, in the *Zeitsch. für Anal. Chem.* It can be used for determining the nitrogen in all cases, except when it is present in form of volatile acids, such as cyanogen compounds and oxides of nitrogen.

The new method consists in heating the substance containing nitrogen for some time with a copious quantity of concentrated sulphuric acid to a temperature approaching the boiling point of the latter, and then to oxidize the resulting solution with an excess of dry and powdered permanganate of potassium. By this treatment the whole of the combined organic nitrogen is converted into sulphate of ammonium, and it is afterwards only necessary to supersaturate with solution of soda and to distil in order to be able to determine the total nitrogen as ammonia in the usual manner by titration. The sulphate of ammonium formed is not destroyed or lost by the energetic oxidation, as has been proved by careful experiment.

The details of the manipulation are very simple. The substance, whether solid or liquid—and, if solid, it need not even be powdered—is weighed or measured into a small flask, in which the subsequent treatment is executed. In the case of substances containing about 10 per cent of nitrogen, about 0.1 to 0.2 Grm. are sufficient; if less is present, up to 1 Grm. may be taken. 10 C.c. of strong sulphuric acid, known to be free from ammonia, are now introduced by means of a pipette, the flask, in an inclined position, placed upon wire gauze over a gas flame, and the contents heated for one or two hours to near the boiling point of the acid, which may be known from the occasional slight bumping. If the substances retain their nitrogen very tenaciously, such as quinine, morphine, etc., a little fuming sulphuric or anhydrous phosphoric acid may be added to the contents of the flask in the beginning. When the action of the acid is completed, which usually results in a solution of the solid, the flame is removed, and a fine spray of finely-powdered permanganate of potassium contained in a tube closed with a fine wire gauze and inserted in the neck of the flask, is made to rain down upon the acid in the flask until the latter assumes a green color. The flask is then cooled, the contents diluted with water, 40 C.c. of solution of soda, sp. gr. 1.300 added, and the flask immediately connected with a well-cooled condenser previously arranged and

provided with a receiver containing standard volumetric acid. If the original flask is too small, the contents may be transferred to another, the water being used in portions to wash the original flask carefully. To prevent bumping during the distillation, a few pieces of zinc may be placed in the flask. The estimation of the ammonia by finding the amount of unsaturated acid is a simple operation and accomplished with great sharpness. It may be performed in several ways. The author prefers to add a mixture of iodide and iodate of potassium (which give up a quantity of free iodine equivalent to the free acid present), and so estimate the amount of free iodine by volumetric solution of hyposulphite of sodium.

A New Method of Estimating Urea by Titration.

H. J. HAMBURGER gives the following new method for estimating urea:

REAGENTS.—1. *Alkaline solution of bromine.*

Dissolve 30 Grm. of sodium hydrate in 1 liter of water, and shake the liquid with about 20 cubic centimeters of bromine. The resulting clear yellow liquid will become somewhat cloudy after 15 minutes, and must be filtered through asbestos, after which it remains clear. More than 20 Cm. of bromine must not be used, because the volume of the bromine solution required for an analysis is the larger, the less bromine it contains.

2. *Solution of arsenite of sodium.* Weigh 19.8 Grm. of arsenious acid, warm on a water bath with a solution of 10.6 Grm. of pure carbonate of sodium, and dilute to 1 liter.

(Since arsenite of sodium may be had in the market, the reagent could be also prepared by dissolving 38.4 Grm. of this salt in water to 1 liter.)

3. *Iodine solution.* Dissolve 12.7 Grm. of iodine in water, with the aid of iodide of potassium, to 1 liter.

Before the actual analysis, it is necessary to adjust the relation between the arsenite and the iodine solution. For this purpose, 10 C.c. of the former, mixed with 20 C.c. of a saturated solution of carbonate of sodium, and a few drops of clear starch solution are first mixed, and this is titrated with the iodine solution until a blue tint just begins to appear.

The relation of the alkaline bromine and of the arsenite solution is ascertained by measuring off 10 C.c. (or more) of the bromine solution, adding an excess of 1.2 to 3 C.c. of arsenite solution, passing carbonic acid gas through the mixture for about 15 minutes, rinsing the gas delivery tube into the liquid, and then adding 20 C.c. of a nearly saturated solution of carbonate of sodium and starch solution. The excess of arsenite of solution is now titrated back with the iodine solution. Finally, the bromine solution is compared with a solution of urea of known strength, by cautiously adding the bromine to the urea solution until the latter acquires a yellow tint, then adding an excess of 1.2 to 3 C.c. of bromine solution, and finally titrating back with the arsenite and the iodine solution.

[When the liquids are once adjusted, it will be found that the analysis takes a comparatively short time, particularly if a series of them is to be performed.]

Execution of analysis. Measure off 15 (or 10, or 20) C.c. of urine; add bromine solution cautiously and under agitation until no more gas is given off, and then add 1.2 to 3 C.c. more of bromine solution. After 5 or 10 minutes, add arsenite solution until the color of the liquid turns lighter yellow, and then test with starch and iodide of potassium paper, to see if the latter is still rendered blue [this is only ne-

cessary in the first titration in a series]; if not, add about 3 C.c. of arsenite solution. Now pass carbonic acid gas [best from a cylinder or reservoir] through the liquid, add about 20 C.c. of carbonate of sodium solution, and a few drops of starch paste, and determine the excess of the arsenite by the iodine solution.

From the data thus obtained, the quantity of urea may be easily calculated.—*Chem. Centralbl.*

On Koettstorfer's Method for the Examination of Butter for Foreign Fats.

WHILE testing butters according to the methods of Hehner,* Reichert,† and Koettstorfer,‡ it occurred to the writer that an examination of vegetable oils by the last two of these methods might furnish some interesting results. The object in view was to ascertain whether it is possible to mix butter or oleomargarine with an oil in such a manner that detection would be impossible by any one of the above methods.

In every case the analysis was conducted as directed in the papers referred to.

The following oils were examined in duplicate by the Koettstorfer process, singly by the Reichert :

	Merm. KOH	C.c. 1-10th Nor NaOH
Olive oil	185.2	0.2
Cotton-seed oil	191.2	0.3
Peanut oil	196.6	0.4
Palm oil	196.3	0.8
Oil benne	192.4	0.6
Oil sweet almonds	187.9	0.3
Poppy oil	192.8	0.5
Rapeseed oil	183.0	0.3
Linseed oil	195.2	0.2
Cocoa butter	199.8	1.6
Cocoanut oil	250.3	3.7
" " washed	246.2	2.7

It will readily be seen that none of the above oils could be mixed with butter without fear of detection by both processes, with the notable exception of cocoanut oil.

The cocoanut oil used was a refined article, of evidently superior quality. Exposed to the air for more than a week, it did not turn rancid, nor did its characteristic odor become perceptibly stronger.

Koettstorfer fixes the limits of the number of Mgrms. of caustic potash requisite to saponify a Grm. of real butter as between 221.5 and 2.2.4. Cocoanut oil, it will be seen, exceeds by a considerable amount the highest of these limits.

After the first results were obtained, it was suggested that soluble free fatty acids might be present to render the result high. Accordingly, about 20 Grms. of the oil were thoroughly washed with boiling water to the amount of six liters. An examination then furnished slightly lower results by the Koettstorfer process, while the figures obtained by the Reichert process were reduced in much greater proportion. It is then possible to mix an oleomargarine with cocoanut oil so as to bring the results within Koettstorfer's limits. In proof of this, the following mixtures were made and results obtained, the object being to approach nearly the limits of Koettstorfer :

Cocoanut Oil.	Oleomargarine.	Mg. KOH per Grm.
49.3 p. c.	50.7	220.0
70.2 p. c.	29.8	234.9
Washed Oil.		
53.1 p. c.	46.9	223.6
75.9 p. c.	24.1	234.9

The oleomargarine used required 193.5 Mg. KOH. per Grm.

It is improbable, also, that these mixtures could be detected by the Hehner process, since cocoanut oil yielded 86.43 per cent of insoluble fatty matter.

The Reichert process would, with such a mixture, be sure to show the adulteration, for the number of cubic centimetres of $\frac{1}{10}$ th normal NaOH would be under one-third the amount requisite for a genuine butter.

In Dietzsch's "Nahrungsmittel," 4th edition, p. 212, mention is made of cocoanut oil as an adulterant of "Schmalzbutter," and in the *Analyst*, vol. xii., p. 93, a case is reported of its use to adulterate lard. In this latter case, the Koettstorfer process would serve as a test, since lard requires for saponification but 195.5 Mg. KOH per Grm., and an addition of only 10 per cent of the oil would raise the figures to 201.

If a process should ever be devised to render cocoanut oil completely inodorous (and it should be extensively used as an adulterant of butter), it will be seen that the Koettstorfer process would be utterly worthless as a test, and the Hehner of scarcely greater value. Thus entire reliance would have to be placed on the method of Reichert.—RUSSELL W. MOORE, in *Chem. News*, Dec. 5th.

On the Decomposition and Detection of Carbon Disulphide.

If baryta water is added to an aqueous solution of carbon disulphide, the reaction at ordinary temperatures is scarcely appreciable. If heat is applied there is quickly formed a plentiful white precipitate of barium carbonate, whilst the supernatant liquid takes a fine yellow color. In time the whole of the carbon present passes into the state of carbonic acid. This reaction is so definite that the authors found upon it a process for the quantitative determination of small quantities of carbon disulphide. The proportion of this compound dissolved in water sinks from 2 Grms. per liter at 3.4° to 1.05° at 41.0°, and becomes null at the boiling point of carbon disulphide. These experiments lead to the remarkable result that a solution of carbon disulphide in water behaves in a manner analogous to the solutions of gases which have no action on water.—G. CHANCELL and F. PARMENTIER in *Compt. Rend.* and *Chem. News*.

Copper and Zinc-Ammonium Compounds and their Technical Use.

MANY experiments have been made during the last few years, to make a practical use of the property of the compounds of ammonium with copper or zinc, of dissolving cellulose, for the purpose of manufacturing a sort of parchment. The process originally given by J. Scoffern is now being carried out on a large scale, and is especially used for silk, paper, and canvas. These fabrics are dipped into a concentrated solution of copper-ammonium until the external fibres are completely gelatinized. On drying upon steam-drums, they form a dense layer. In order to prepare a thicker kind of fabric, several thin sheets are drawn through the bath together, then pressed and dried. On careful drying, the copper united with the fibre to a green compound, which also protects the fabrics from insects and mould. Instead of copper ammonium alone a mixture of it and the corresponding zinc compound can be used. The latter does not act well when used alone.

The solution of copper which is employed, contains, according to the author, about 100 to 150 Grms. of ammonia and 20 to 25 Grms. of copper in 1 liter. It is prepared on the large scale, by allowing strong water of ammonia to act upon copper-turnings

in presence of a current of air. From brass turnings a similar solution, containing copper and zinc, may be obtained. Zinc alone is but little attacked under these circumstances. If iron is present, the solution is accelerated in consequence of the establishment of a galvanic current. Pure solution of copper-ammonium (without zinc) has absolutely no effect upon iron vessels.

The solubility of copper, when treated with ammonia and air, diminishes rapidly with increasing concentration of the solution. Even under the most favorable circumstances, only a small part of the oxygen of the air is retained when passed through it. When the strength of the copper solution does not exceed 12 to 15 Grms. per liter, it is very permanent, and is not only useful for the purposes above mentioned, but also very serviceable for preserving wood. Fabrics treated by this process are known in commerce as "Willesden fabrics."—*Chem. Centralbl.*

Iodine Extraction.

THE process formerly employed in Antofagasta of treating the Caliche mother-liquors with sodium hydrogen sulphite did not extract more than 70 per cent of the iodine present (*Dingl. Polyt. J.*, 231-375). Loire and Weissflog first reduce the sodium iodate with calcium sulphide, and precipitate the sodium with copper sulphate and sodium sulphite. The calcium sulphide is produced by igniting calcium sulphate with coal in a rotating furnace. After complete reduction of the iodate, copper sulphate and sodium sulphite are added. The precipitated cuprous iodide is washed and dried.—*Dingl. Polyt. and J. Chem. Soc.*

The Permeability of Silver by Oxygen Gas.

L. TROOST has made an observation on the permeability of silver for oxygen gas, which may possibly become the basis for a method of manufacturing oxygen on the large scale.

It has long been known that platinum, as well as iron, at a bright red heat, are porous to hydrogen gas, and that fused silver absorbs oxygen which it does not wholly give up on cooling. This fact suggested the idea that silver, at a sufficiently high temperature, is just as permeable for oxygen as the above named element for hydrogen. On trial, this was found to be confirmed.

A pure silver-tube (of 1 cm. calibre and 1 millimeter thickness of silver), inclosed by a platinum cylinder, was heated in a suitable muffle, in the vapor of metallic cadmium. The silver tube was exhausted by a Sprengel pump and its exterior could be surrounded by any desired gas. It was found that at the temperature of boiling cadmium, oxygen slowly passes through the walls of the silver-tube, 6.1 C.c. of the gas being collected in one hour. This amount to 1,700 C.c. (or 57½ fluid ounces) per square meter of surface (about 50 fl. oz. per square yard). If atmospheric air is admitted to the outside of the tube, oxygen gas also passes through, though more slowly, and accompanied by only a trace of nitrogen.

When using a silver tube of only half the thickness ($\frac{1}{2}$ mm.) in silver, the rate of filtration of oxygen was about doubled.

It was also found that oxygen passes through the silver not only when it is pure, but also when it is mixed with other gases, such as carbonic oxide, carbonic acid, etc. Nitrogen passes through with the greatest difficulty.—*Journ. f. prakt. Chem.*, 1884, 134.

* Fresenius, *Zeitschrift*, vol. xvi., p. 147.

† *Ibid.*, vol. xviii., p. 62.

‡ *Ibid.*, vol. xviii., p. 199.

Listerine.

ACCORDING to the *New Idea*, the following will make a preparation resembling listerine:

Borax.....	gr. 64
Benzoic acid.....	" 64
Boric acid.....	" 128
Distilled water.....	fl. oz. 6

Dissolve with the aid of a gentle heat

Thymol.....	gr. 20
Alcohol.....	fl. oz. 3
Eucalyptol.....	" 5
Oil of Gaultheria.....	" 5
Oil of Peppermint.....	" 3
Oil of Thyme.....	" 1

Mix the watery and alcoholic solutions, let stand over night, then filter and add enough water to make sixteen fluid ounces, and render the liquid clear, if necessary, by cautiously adding a little alcohol.

Another imitative formula is given by the *National Druggist*:

Thymol.....	gr. 6
Boric Acid.....	" 30
Oil of Eucalyptus.....	drops 4
" " Wintergreen.....	" 1
Alcohol.....	f. 3 4
Glycerin.....	f. 3 4
Water, enough to make f. 3 16	

Hair Wash.

DR. HOFFMANN, in the *Pharm. Rundschau*, recommends a hair wash prepared as follows: Digest 10 oz. of coarsely-powdered quillaya bark, and 1½ oz. of powdered capsicum, in so much spirit and water (equal parts) as to obtain 6 pints of a tincture. Then rub 2 oz. carbonate of ammonium with 4 oz. of cold water, and add to the tincture. When the salt is dissolved, add 1 pint of eau de Cologne. After five or six days, filter through a covered funnel, and add 12 oz. glycerin. Fill into well-stoppered bottles.

McCall Anderson's Dusting Powder.

• THE *Drugg. Circ.* gives the following formula:

Starch.....	3 1
Camphor, powd.....	3 1½
Oxide of zinc.....	3 ½

This powder should be rendered perfectly impalpable by sifting it through a fine cloth, and should be preserved in a wide-mouthed bottle. Another formula furnished by a correspondent to the same journal is:

Starch.....	16 parts
Oxide of zinc.....	8 "
Camphor.....	1 "

Hop Bitters.

A CORRESPONDENT of the *Drugg. Circ.* writes that before Hop Bitters were put upon the market, the following formula was sold around New York State. The writer states that he frequently put up the materials, and he is assured that the product is very much like the Hop Bitters sold. The sediment which appears often in the Bitters of the market, is said to be due to the bad condition of the water at Rochester, at times:

Hops.....	4 oz.
Dandelion root.....	1½ oz.
Mandrake root.....	½ oz.
Buchu, long.....	1 oz.

Put into a jar, add one gallon of boiling water, cover, after 12 hours strain, and to 7 pints add 1 pint of alcohol.

Deodorizing Disulphide of Carbon.

THE simplest way, according to Chas. L. Hay in the *Drugg. Circ.*, is to distil the disulphide with quicklime, after having allowed the latter to be in contact with the former for 24 hours. The distillate is to be received in a flask partially filled with clean copper turnings. The lime remaining in the retort is strongly colored.

Treatment of Frost-bite.

DR. L. G. DOANE, of New York, reports, in the *Therapeutic Gazette*, that the following application has been found excellent in frost-bite:

Carbolic Acid.....	10 drops.
Oil of Turpentin.....	1 oz.
Vaseline.....	1 oz.

Mix the vaseline and oil of turpentin by rubbing in a mortar, and then incorporate the acid.

Parabuxusidine is the name of a newly-discovered alkaloid, found by Barbaglia in the twigs and green leaves of the box (*Buxus sempervirens*). Its crystals are microscopic, transparent, and colorless; insoluble in water, but very soluble in alcohol. A dilute solution gives intense acid reaction with litmus. It is bitter, melts at a low temperature, burns completely on platinum with evolution of smoke, and contains nitrogen.—*Chem. Tech. Centr. Anzeig.*

Borate of Quinine, in the form of an amber-colored crystalline powder, of a not unpleasant odor, bitter taste, and soluble in an equal quantity of water, has been found in the medical clinic of Bonn to be better tolerated than other salts of quinine, and of equal therapeutic value to sulphate or muriate, and it has the advantage of being less bitter and of causing less ringing of the ears.

Alvelox is a drug lately forwarded by the Consul at Pernambuco to the State Department, with a statement of its use in the treatment of cancer, several cases of which are alleged to have been cured by its application. Following its application to an ulcerating surface profuse suppuration occurs. The drug having been turned over to the Marine Hospital Service for trial, Surgeon General Townsend reports its use in a case of lupus of the nose of forty years' standing, which had resisted other treatment, but which was cured by this method in a few days.—*N. Y. Med. Jour.*

Gibier's Pills for Diarrhoea (Union Médicale):

Sulphate of Quinine...	½ gr.
Extract of Aconite,	
Tannic Acid, of each...	½ "
Extract of Opium.....	½ "
Spirit of Quince,	
Powdered Licorice, of	
each enough to make	
one pill.	

Resorcin in Laryngitis is recommended by Andeer as a local application, on account of its action as a disinfectant and local anæsthetic. Strong solutions are caustic, while dilute ones are merely astringent.

Resorcin, dissolved in castor oil, is a remedy recommended by Dr. Bogresh in the treatment of diarrhoea attended with foul-smelling discharges which contain micro-organisms, and fever with occasional delirium. For adults he gives ʒi. of resorcin dissolved in 3 v. of the oil (warm), to be taken at once [rather heroic?], and to children, gr. viij., each, of the resorcin and oil.

Apomorphine.—Dr. Urber, of Darmstadt, relates a case of chronic asthma (thirty years' standing) which was permanently cured in three weeks by the use of apomorphine in doses of ½ grain increased to ½ grain, thrice daily.

Iodoform Eruption.—Neisser reports six cases of eruption, of impetiginous character, following the external use of iodoform. Relief followed the stopping of the iodoform and the application of a 5% solution of acetate of aluminum.

Reddened Carbolic Acid.

MUCH has already been written on this subject, and it is by no means yet exhausted. In a recent paper by Dr. Hager (*Pharm. Centralbl.*), the opinions formerly held by him and others are first quoted. Then he mentions Kolbe's supposition, who ascribed the change in color to the presence of other phenols, which view was adopted by Hager himself. Recently Dr. Hager received a communication from W. Fahlbusch, in which apparently strong proof was offered that the red coloration was due to the presence of iron. Though Dr. Hager could not detect any iron in a small sample of reddened carbolic acid which he happened to have kept in stock for a long time, he afterwards succeeded in finding this metal in the residue left after distilling a larger quantity of the reddened acid.

In a subsequent communication, Dr. Hager gives the results of a fractional distillation of the reddened acid, which appeared in form of a crystalline mass, at ordinary temperature, and contained about 9 per cent of water. Three fractions were separately caught, the first comprising ⅓, the second ⅓, and the third ⅓ of the total quantity. All of these fractions were colorless, and only the last drops, owing to incipient carbonization, had a brown color. The residue was a resinous, dark reddish-brown mass, which did not contain a trace of iron. This fact, therefore, appears to throw doubt, after all, upon the iron as a cause of the coloration.

The first distillate or fraction obtained contained about 6 per cent of water, the second 3.5 per cent, and the third 11 per cent. The first fraction congealed in the neck of the retort, and had to be rendered liquid by warming. When again solidified it formed a transparent, crystalline mass. The second distillate formed a very firm, more whitish mass, while the third remained liquid, and only became crystallized when cooled to 4° or 5° C., while it again became liquid at 15° or 16° C.

One thing is certain, namely, that reddened carbolic acid may be converted into a colorless body by rectification. This must, of course, be conducted so that the flame shall not come into direct contact with the glass retort, and the position of the latter must be such that the heavy phenol vapors can easily run down the neck. Should the latter be stopped up, the neck is first protected by a thin sheet iron cover, and the latter heated with a naked flame. The last ⅓ parts should be collected separately, as they contain the largest quantity of water.

Dr. Hager proposes to reserve the three fractions thus obtained in order to ascertain whether they will remain colorless or not. In the residue left after the distillation he found a body present which appeared to have properties resembling those of corallin, and on treating the alcoholic solution of the resinous mass with oxalic acid, a red color was developed. This points to the presence of a tropæoline. It is, therefore, possible that the reddening of carbolic acid is due to the presence of bodies which bear a relationship to the coloring agents just mentioned.

Strong Solution of Cocaine.—Dr. Frænkel, of Breslau, in the course of his experiments with cocaine in diseases of the uterus, etc., found it necessary to employ a solution containing as much as 20% of the alkaloid. It was prepared from:

Cocaine hydrochlorate...	1 part.
Distilled water.....	3 parts.
Alcohol.....	2 "

To be filtered without addition of acid.

A Clear Shellac Varnish.

A SIMPLE mode of clearing turbid lacquer or solutions (however strong) of shellac in spirits of wine, is to add to the same a quarter of their bulk of commercial "benzine" or refined petroleum spirit. If the mixture be agitated three or four times during the space of an hour and then allowed to stand it speedily separates into two distinct layers, the upper one is a solution of the fatty or waxy matter in petroleum spirit, the lower is a brilliant alcoholic solution of pure shellac. The petroleum spirit only dissolves to a small extent in the other liquid, and the latter when drawn off is easily freed from it by slightly warming, with gentle agitation. Crude lac of any kind may be caused to give an absolutely clear solution in alcohol if it first be roughly powdered and then washed with warm petroleum spirit once or twice so as to dissolve out all the fatty matter. This latter has the advantage of simplicity, while at the same time the quality of the lac is in no degree injured. — *Southern Coach Maker and Canad. Pharm. Journ.*

Solution of Resinous Substances.

A NOTE in a foreign journal has called the writer's attention to a method for dissolving resins which he has used successfully for some fifteen years, but which may not be generally known. It was first employed for making shellac varnish, when large quantities of that compound were required for export to the United States, and has many advantages over simple maceration, the principal being the saving of time effected.

The method is really a modification of Burton's circulatory displacement, though it does not appear that the discoverer of that plan ever applied it to the solution of resins.

In case of the solution of shellac the resin is put in a tin vessel, preferably of conical shape, and perforated plentifully with holes of at least one quarter of an inch in diameter. The vessel is suspended by three cords—as a scale pan—and through the point of intersection of the cords a stick is passed, so that, when this is lodged across the top of a barrel—previously deprived of its head—the vessel may hang at about a third of the depth of the barrel. The solvent, methylated spirit is now poured into the barrel, so that the vessel may be completely submerged. A cover should now be put on to prevent evaporation and the whole left undisturbed for two or three days, when the resin will have been completely dissolved, with the exception of a small portion of an insoluble tough residue, which should be rejected. The resulting solution will be clear. Stirring should be altogether avoided, as it retards the process by interfering with the operation of the force of gravity on which the method depends.

The writer has not tried this plan with other resins, but it would no doubt be of general application.

While speaking of shellac varnish, it may be well to make another useful suggestion, which can also be turned to account for other spirituous varnishes. When such varnishes are applied to surfaces at a low temperature or in a damp atmosphere, the film often becomes dull, or "chills," as it is technically termed. If a few lumps of ordinary carbonate of ammonium be placed in the varnish, and allowed to remain for a few days, this disagreeable result may be avoided. For transparent, colorless varnishes, for photographic use, this hint will be found applicable, and is worth remembering. — E. B. SHUTTLEWORTH, in *Canad. Pharm. Journ.*

Rare Accidental Effects of Salicylate of Sodium.—Dr. Dreschfeld mentions in the *Medical Chronicle* a case of nephritis following diphtheria, in a female of 18 years, in which the use of salicylate of sodium, in doses of 10 grains, thrice daily, caused, after the third day, a rise of temperature to 103° and of pulse from 75 to 120, severe headache, drowsiness, dry and brown tongue, nausea and vomiting. The fourth day the symptoms were aggravated and accompanied with pain in left lumbar region, enlarged spleen, incessant vomiting, and difficult breathing. Stoppage of the remedy was followed by abatement of these symptoms, but a return to the use of the remedy caused their reappearance. Following the withdrawal of the remedy there appeared, after some days, an erythema of the whole surface, puffiness of the face and limbs, and the urine gave evidence of the drug to appropriate tests.

Thymol, Phenol, Salicylic Acid, and Boric Acid, according to Vigier, should not be used in too concentrated solution, two parts to one thousand of water being strong enough for salicylic acid or thymol, and thirty parts per thousand for the others. In these proportions no alcohol is needed to form a clear solution.

Paste for Labels which are Liable to Become Damp.—A paste is first prepared in the usual manner, from rye-flour to which some glue has been added. The mass is boiled, and for every 100 parts of it three parts of boiled linseed oil and three parts of turpentin are added. Labels affixed with this paste are said to remain adherent even when wetted. — *Rundschau.*

New Method of Preparing Chloroform, Bromoform, Iodoform.

THE "Chemische Fabrik auf Actien, vormals E. Schering," of Berlin, recommends a new process patented in its own name for preparing chloroform, bromoform, and iodoform by electrolysis from the corresponding halogen compound with alkalies or alkaline earths, in presence of alcohol, aldehyde or acetone, and with the aid of a gentle heat. For instance, 50 parts of iodide of potassium are dissolved in 300 parts of water and about 30 parts of 96% alcohol are then added. Through the warm mixture contained in a suitable vessel a constant stream of carbonic acid is passed, and at the same time it is electrolyzed. Iodoform then separates as a crystalline powder.

In order to obtain iodoform in large crystals, the iodide of potassium is dissolved in 20% alcohol, and the operation conducted as described above.

In the preparation of chloroform and bromoform the corresponding haloids are manipulated in the same manner, except that it is not necessary in either case to employ a current of carbonic acid gas. — *Dingl. Pol. Journ.*

Kamala (Rottlera), which occurs in the market in quite an impure state, usually containing an abnormal quantity of mineral matter, may be purified, according to Salzer, by treating it with a thirty per cent solution of chloride of sodium. This solution possesses a specific gravity which permits the pure kamala to float on top, while the mineral constituents will collect at the bottom. It is not necessary to treat the whole bulk of the powder this way, but generally only the residue remaining after passing the kamala through a very fine sieve. The portion floating upon the salt solution is removed, washed, and dried. — *Pharm. Zeit.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,433.—Parchment for Dialyzers (M. J. A.)

For all ordinary purposes, or for operations on a large scale, the commercial artificial parchment paper will answer very well. This may now be had of excellent quality, of various thicknesses, and can be bought in so-called endless rolls up to about 36 inches in width.

It will often be found that an apparently perfect surface of artificial parchment paper, when held up to the light, will show more or less pin-holes, some being scarcely distinguishable while others are quite large. These may be closed by applying to the spots, by means of a small camel's hair pencil, a little fresh gelatin solution and afterward a little bichromate of potassium solution (a fraction of a drop will be often sufficient), and then exposing the sheet to sun-light, when the gelatin will become insoluble. These spots probably permit but little or no liquid at all to dialyze, and hence too many should not be contained on one sheet.

The best dialyzing medium, after all, are natural animal membranes, such as the bladder or the intestinal gut. These are first soaked in water, then thoroughly cleaned, by scraping, from fat, etc., and finally treated with ether until the latter ceases to become colored or to dissolve any fatty substance. Finally they may be preserved under ether for years.

No. 1,434.—The new Standard for Baume's Hydrometer (U. V.)

Owing to the uncertainty which is inherent in the method of stating the specific gravity of a given liquid in degrees of Baumé, the Association of Manufacturing Chemists of North America some time ago decided to adopt as a basis of calculation, for liquids heavier than water, the formulae:

$$n = 145 - \frac{145}{a} \text{ and } a = \frac{145}{145 - n}$$

in which n denotes the degree of Baumé, and a the specific gravity. The rules may therefore be stated as follows:

1. To find the Degree of Baumé divide 145 by the specific gravity and deduct the quotient from 145.

2. To find the Specific Gravity, divide 145 by the difference between 145 and the given degree of Baumé.

This standard has been selected merely as a matter of convenience, and not because it is based on well-established facts or determinations. It is much to be regretted that the old custom of quoting in degrees of Baumé is still being followed and apparently sanctioned for a long time to come.

No. 1,435.—Nickel Vessels (Sh.)

Ditmar has recently stated that nickel capsules or crucibles are quite resisting towards caustic alkalies, at least up to a solution containing 60% of alkali. As the metal is harder than silver, and therefore less liable to be bent or dented, and as it is a less efficient conductor of heat, capsules of nickel

are of considerable service in many operations. The only difficulty is encountered when ferric oxide stains remain on the metal. On trying to remove them with an acid, a minute amount of nickel is dissolved at the same time.

No. 1,436.—**Bismuth Hair-Dye (M.)**
Subnitrate of Bismuth... 5 parts.
Hydrosulphite of Sodium.. 20 "
Chloral Hydrate..... 10 "
Glycerin..... 500 "

Dissolve each of the solid ingredients in a portion of the glycerin, using a gentle heat in the case of bismuth, if necessary; then mix the liquids and perfume them to taste.

No. 1,437.—**Secretary of Quebec Board of Pharmacy (H. C. N.).**

The Secretary of the Board of Pharmacy of the Province of Quebec is Mr. Wm. Ahern, Registrar of the Pharmaceutical Association of the same Province, 223 McGill street, Montreal, Can.

No. 1,438.—**Scudamore's Inhalation (E. I.).**

The formula is the following:

Iodine.....gr. 6
Iodide of Potassium..... 6
Alcohol.....f. 3 2
Water enough to make. fl. 3 6

Tincture of Conium, as directed.

From $\frac{1}{4}$ to 5 fluid drachms of the above solution, with $\frac{1}{4}$ fluid drachm of tincture of conium, are to be added to warm water (120 F.) in a glass inhaler, and used twice a day. Two-thirds of the amount directed are first put into the inhaler and the rest added when half of the time for inhaling has elapsed.

No. 1,439.—**Dobell's Solution (G. R.)**

The formula which has been used for years in the public hospitals of New York is as follows:

Carbolic acid..... 3 1 1
Borate of Sodium..... 3 2
Bicarbonate of Sodium.. 3 2
Glycerin.....f. 3 3
Water, enough to make f. 3 32

Recently, Mr. E. V. Zoeller, of Tarborough, N. C., stated, in a communication to the *Weekly Drug News*, that the correct formula appeared to be that published in Mackenzie's Manual of Diseases of the Throat and Nose, vol. II., 380 (Wm. Wood & Co., N. Y., 1884), namely:

Borax..... 3 1
Glyceride of Carbolic acid 3 2
Sodium Bicarbonate..... 3 1
Water..... 0 1

The glycerite of carbolic acid meant is that of the British Pharmacopoeia, which is made by dissolving 1 av. ounce of carbolic acid in 4 imper. fl. oz. of glycerin.

Dr. Hughes, of the Kings County Hospital, in the same journal, states that the original formula, as given by Dr. Horace Dobell, of London, was this:

Carbolic acid.....m. 30
Bicarbonate of Sodium.. 3 1
Borax..... 3 1
Glycerin..... 3 1
Water, enough to make.. 0 1

Parrish's Treatise on Pharmacy (5th ed.) has another formula in which the glycerin is omitted.

No. 1,440.—**Formulae of Perfumery (G. A. S. Jr.).**

We cannot be expected to try ourselves every formula that comes under our notice, or is published by us. But we take care to quote none that is not vouched for by some respectable authority. There is a very great diversity among various authorities and references, regarding even the most popular and supposed uniform perfumes. Of most proprietary articles,

the true composition is unknown, and it is only possible in rare cases to approach the original faintly. Analysis can do nothing in this case, as it is practically impossible to separate and identify each constituent. Only an expert in perfumery, one who is accustomed to compound and handle the simple and compound essences used as bases or ingredients in complex perfumery, is likely to succeed by long experimentation and after the consumption of much valuable material, in making imitations of other manufacturers' products. As a rule, however, this is not an honest business, and is to be condemned. From what we know of others, however, it is usually this very search after an imitation of other makers' goods, that puts the experimenter upon a track of his own, enabling him to produce compounds differing from those of others, but equally salable and commendable.

Having made this preface, we give you a few formulæ selected from good authorities for the preparations you desire:

1. *Eau des Bayadères* (Naquet).

Oil of Bergamot... 1920 grains
" " Lemon..... 920 "
" " Orange, Portugal..... 920 "
Oil of Neroli, Bigarade..... 460 "
Oil of Petit grain. 460 "
" " Rosemary, finest..... 230 "
Oil of Rose..... 20 drops
Balsam of Tolu.... 460 grains
Cochineal..... 230 "
Deodorized Alcohol, 86%..... 3 gallons

Macerate for ten days and filter. A few drops, or a sufficient quantity to tinge and scent, are added to the water used for washing the face and hands.

2. *Eau de Cologne* (reputed imitation of J. M. Farina's, of Cologne).

Oil of Rosemary, finest..... 1 oz. av.
Oil of Petit grain... 1 "
" " Lavender... 1 "
" " Cedrat..... 1 "
" " Portugal.... 2 "
" " Lemon..... 1 "
" " Bergamot... 200 grains.
" " Neroli Bigarade..... 370 "
Orange Flower Water..... 20 fl. oz.
Deodorized Alcohol, 86 %..... 24 gall.

Mix the oils and let them stand for about an hour, shaking occasionally. Then add the orange flower water and shake again for several minutes. After standing for 24 hours, filter.

[Although this has been reported as Farina's Cologne many years ago, it is more than doubtful that the true formula has ever become known.]

3. *Toilet Vinegar.*

Spirit of Melisse.. 3 pints.
" " Lavender. 2 "
" " Rosemary 2 "
Oil of Bergamot... 1500 grains.
" " Orange, Bigarade..... 900 "
Oil of Lemon..... 600 "
" " Orange, Portugal..... 500 "
Oil of Neroli..... 300 "
" " Peppermint 230 "
" " Thyme..... 230 "
" " Cloves..... 80 "
" " Cinnamon.. 40 "
" " Verbena... 230 "
Alcohol, 32 %..... 20 pints.

Mix and distil on a water bath, so as to obtain 25 pints. In 8 pints of this, macerate 3 lbs. of orris root and 7 oz. of balsam of Tolu for one month. Then filter. Add the filtrate to the remainder of the distillate, and add 3 pints of acetic acid.

No. 1,441.—**The Benzin Test for Balsam of Peru (U.).**

The statement in the U. S. Pharm. among the tests of balsam of Peru, that the balsam "should not diminish in volume, when agitated with an equal volume of benzin, or water (abs. of fixed oils and alcohol)" is not correct. How the error crept in cannot now be ascertained. That benzin dissolves out, from the balsam, a considerable portion, was well known long ago. In fact benzin, as well as certain other solvents, dissolve out a volatile aromatic oil of very high boiling point, generally known as cinnamain, and in reality a cinnamate of benzyl, which amounts, in different lots of balsam, to between 45 and 60 per cent. Hence the statement in the U. S. Ph. must be corrected by striking out the words "benzin or," and "fixed oils and."

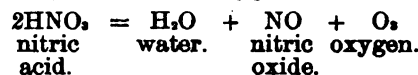
Another statement made in the same place is, that "a mixture of 1 part of the balsam with 3 parts of disulphide of carbon separates from the balsam about 40 per cent of resin." This quantity has been shown by McEwan to be much too high. A good balsam should, under those circumstances, leave not more than 16% of insoluble residue. Any larger amount points to the presence of adulterants, particularly benzoin, which may thus be detected.

No. 1,442.—**Reaction between Ferrous Sulphate and Nitric Acid (G.).**

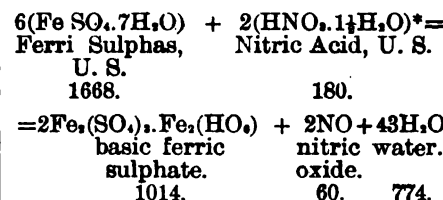
We have received the following query: "Will you kindly publish in your next issue the equation for the reaction between Ferri Sulphas (U. S. Ph.) and Nitric Acid (U. S. Ph.), supposing equal parts, by weight, were used at the ordinary temperature."

Without attempting to test the reaction practically, in order to arrive at a correct quantitative knowledge of the resulting products, we feel justified in giving the following explanation, as the result of previous experience, and on the basis of well-established facts.

Nitric acid, when added to a ferrous salt, acts primarily as an oxidizing agent, splitting up into water, nitric oxide, and nascent oxygen:



Under the influence of the oxygen, which does not always become evident in the end-product, the metal is raised to a higher atomicity, that is the dyad iron" (ferrosium) is raised to the tetrad or triad iron" (ferricum). If the ferrous salt contained any other acid, or acidulous radical, except nitric acid, the action of the nitric acid is to produce a basic ferric salt, as there is not enough of the other acid present to fully saturate the ferric base to a neutral salt. If a neutral or saturated salt is wanted, an additional amount of the same acid as is already in the ferrous salt must be added. Compare the U. S. Ph. processes for Liquor Ferri Chloridi, Liquor Ferri Tersulphatis, etc. If the conditions named by our querist are given, then the reaction would, in the first place, proceed as follows:



that is, assuming first that only equivalent proportions were to react upon each other, we would obtain a basic sulphate or oxy-

* Approximately, since the official acid contains 69.4 per cent of HNO₃ and 30.6 per cent of water.

sulphate of iron. One of the conditions given, however, is that equal *weights* of both the salt and the base be present. It will be seen on glancing at the formula of the basic salt that the excess of base $\text{Fe}_2(\text{OH})_3$ requires 6 molecules of nitric acid HNO_3 to convert it into a neutral salt, in which case the basic sulphate would be rendered into a neutral sulphate and a neutral nitrate. These six additional molecules of nitric acid would weigh—in molecular weights—540 parts, making the total nitric acid 720 parts, while the iron salt originally amounted to 1668 parts. When the reaction has proceeded to this point, all the nitric acid over and above 720 parts will merely help to form an acid salt, or it will merely dilute the liquid containing the neutral sulphate and nitrate.

To sum up, equal parts by weight, say 100 parts each of crystallized ferrous sulphate and official nitric acid would make as nearly as possible:

	Parts.
Ferric Sulphate. $\text{Fe}_2(\text{SO}_4)_3$	48
Ferric Nitrate. $\text{Fe}_2(\text{NO}_3)_6$	28 (nearly)
Nitric Oxide. NO	4 (nearly)
Water. H_2O	62½
Excess of Nitric Acid	57 (nearly)

Nitric Acid consumed in reaction. 200
43 (nearly).

No. 1,443.—Venetian Soap (W. S.). This is the same as White Castile Soap. Other names are: Sapo Hispanicus, Sapo Venetus albus, Sapo Alcantaricus, Marseilles Soap, etc. We need not tell you that it is a soda soap originally made with olive oil exclusively, but now also made with other bland vegetable oils, and thoroughly saponified so that it has no caustic or irritant qualities. The remainder of your query will not require any further answer.

No. 1,444.—Ginger (G. W. F.). There are large quantities of both African and of Jamaica Ginger imported into this country. In 1880, 3,933,860 lbs. of ginger of all kinds were imported into the U. S., and in 1882, 1,463,139 lbs. We have no means of ascertaining how much of each variety was landed. Among the above was also considerable East Indian Ginger, but how much we cannot say. The latter can always be had in the market. You say that you find African Ginger better in flavor and more uniform than Jamaica Ginger. We agree with you in so far that we regard African as well as East Indian ginger as more pungent and aromatic, and therefore preferable for medicinal purposes. Bleached and decorticated or scraped ginger, however, such as Jamaica ginger, which has a less harsh taste, is always preferred for culinary and confectioner's uses. The U. S. Ph. recognizes only the uncoated or decorticated variety, that is, Jamaica ginger. We are of the opinion that the fluid extract and tincture should preferably be made from the unpeeled variety. For aromatic powder, however, we decidedly prefer Jamaica ginger.

No. 1,445.—Sale of Alcohol (N. F.). This correspondent wants to know whether his Government license allows him to sell alcohol across the counter without a city license.

Without assuming any responsibility as to the legal correctness of our advice in this or any other case, where no authoritative decision has been rendered from the bench, we would say that in our opinion the Government license authorizes the holder, within the city of New York, to sell not only alcohol, but every other liquid containing alcohol across the counter, provided the same is not

drunk or used as a beverage on the premises. Alcohol and alcoholic liquids are of three kinds:

1. Those which are chiefly used in the arts and for technical purposes. The principal liquid belonging to this class is *alcohol*.

2. Those which are chiefly used for medicinal purposes. Among these are official and unofficial tinctures, fluid extracts, elixirs, medicated wines (that is wines containing some medicinal agent added to them), and others. But to this class also belong, and quite legitimately, the best grades of brandy, whiskey and other liquors, which are of such a quality that they may be used medicinally, and which the apothecary is very often called upon to supply for the use of the sick or convalescent. It is true that this right and privilege is sometimes abused, in so far that these liquors are sold to any one asking for them. But the exception should not abolish the rule, and the sacred right of the physician to obtain for his patient anything which he conscientiously believes to be to his benefit, should never be infringed upon. At all events, so long as the bottle or package containing the liquor is not opened or the contents consumed on the premises, the United States Government license is all the legal form needed.

3. Those which are used as beverages, being either distilled or fermented. Even regarding these, the city does not exact a license, unless the packages containing them are opened and their contents sold at retail for consumption on the premises. It is this feature which constitutes a tavern, saloon or "hotel," and for which alone the city license is necessary and prescribed by law.

The mere possession of a Government license can, under no circumstances, be twisted or construed into the assumption that the licensee carries on a tavern business. The law does not go by assumption or presumption, but only by facts and proof. The U. S. Government laws regarding the manufacture and sale of all alcoholic liquids, distilled or fermented, are very strict, and their infringement is heavily punished, with perfect justice, we think, because the heavy punishment is needed as a help to the comparatively small staff of Government officials watching the execution of the law, to compel obedience to it. The U. S. Government does not care what becomes of the liquor, after its own law has been complied with and the tax is paid. The state law does not concern itself with the manufacture or the sale, in unbroken packages, of the liquors, but restricts itself to their consumption by retail. There is nothing to prevent any State from enacting laws, taxing both the manufacture and the wholesale traffic in liquors, in addition to the tax already exacted by the U. S. But, on the other hand, we do not believe that Congress has the constitutional power to enact laws controlling the final use of these liquors or taxing their retail consumption.

No. 1,446.—Beef, Wine, and Iron (X. Y. Z.).

Probably the best formula for general use is that published in the New York and Brooklyn Formulary:

Extract of Beef. 256 grains.

Citrate of Iron and

Ammonium. 64 "

Water. ½ fl. oz.

Simple Elixir. 2 fl. oz.

Stronger White

Wine to make. 16 fl. oz.

Dissolve the citrate of iron and ammonium in ½ fl. oz. of boiling water. Pour the hot solution upon the extract of beef contained in a warm mortar or other suitable vessel, and triturate until a smooth mixture results. Then gradually add, while stirring, the simple elixir, and transfer the mixture to

a graduated vessel, using enough stronger white wine [or sherry wine—which is preferred by many] to rinse the mortar and to make the product measure 16 fluid ounces. Allow the mixture to stand during a few hours, then filter.

No. 1,447.—Wine of Iron and Quinine (Z.).

We know of no standard formula for this preparation. Either a definite amount of sulphate of quinine might be dissolved in the official wine of iron, or perhaps the taste might be improved by replacing some of the wine in the latter by simple elixir. Or a sufficient amount of an iron salt may be added to the Elixir Quinine Compositum of the N. Y. and B. Formulary. Or finally, the iron salt may be added to "wine of quinine," for which the British Pharm. gives a formula. In this case, we might suggest the following:

Sulphate of Quinine. 20 grains.

Citric Acid. 30 "

Phosphate of Iron,

U. S. P. 1880. 40 grains.

Orange Wine, enough

to make. 1 pint.

Dissolve the citric acid and then the sulphate of quinine in 15 fluid ounces. Dissolve the phosphate of iron in ½ fl. oz. of boiling water, and add it to the wine. After three days, having occasionally shaken the mixture, filter.

No. 1,448.—Aromatic Castor Oil (X. Y. Z.).

Hager gives the following formula:
Castor oil. 500 Gm. | ab. 18 fl. oz.
Oil of Mirbane 1 Gm. | 15 drops.
Chloroform. . . 15 drops. | 15 drops.

No. 1,449.—Algin (P. F. N.).

This writer asks whether anything further has been published on the subject of "Algerium as a Mucilage," which has recently been published in our paper. We presume the writer means *algin*, on the uses of which we published an interesting article on p. 146 in our last volume (p. 146 of the August number). We have seen nothing further regarding the substance, in any paper that has come under our notice. Should the writer desire to inform himself whether the substance is obtainable in the market and at what rates, we suggest that he write to the author of the paper, Mr. Ed. C. C. Stanford, F.C.S., whose address may be easily obtained from the Secretary of the Society of Arts, London.

Formula asked for.—One of our correspondents wants to know the formula for "*Glycerated Wine, Iron, and Blood Compound*" [!].

Another one asks what the composition of "*Cuticura Salve*" is.

We are not aware of either; perhaps some of our correspondents may know.

Test for Traces of Iodine in Presence of Large Quantities of Bromine.

If much bromide is mixed or contaminated with a small quantity of iodide, and the halogens are separated by agitation with chlorine and disulphide of carbon, the brown color of the bromine completely masks the violet color of the iodine. If, however, one or two crystals of ferrous sulphate are now added, the brown color due to bromine will completely disappear, and the violet tint of the iodine will make its appearance. This reaction, which is undoubtedly due to the powerful oxidizing effect of bromine, is so delicate that the originator of it (Philip S. Brito, in *Chem. News*, 1884, 210) was able to detect traces of iodine in the supposed chemically pure bromide of potassium used as a reagent in the laboratory.

A MANUAL OF ORGANIC MATERIA MEDICA; being a Guide to Materia Medica of the Vegetable and Animal Kingdom, for the use of Students, Druggists, Pharmacists, and Physicians. By JOHN M. MAISCH, Phar.D., Prof. of Mat. Med. and Botany in the Philadelphia College of Pharmacy. *Second edition.* With 242 illust. 8vo. Philadelphia, 1885.

AFTER having been fifteen months out of print, a new edition of this well-known manual lies before us. Among the additions are noticed descriptions of the most important indigenous drugs of North America—even those which are not official—to provide a guide and standard for the herb-gatherer, herb-dealer, druggist, manufacturer, and others who have to handle them. The pharmacognostic portion has also received increased attention, and the illustrations have in many cases been replaced by better ones. The manual will no doubt be generally received as a standard authority on the subject it deals with, and become the general text-book where pharmacognosy or materia medica is taught.

YEAR-BOOK OF PHARMACY. Comprising Abstracts of Papers Relating to Pharmacy, Materia Medica and Chemistry, contributed to British and Foreign Journals from July 1, 1883, to June 30th, 1884, with the transactions of the British Pharmaceutical Conference at the XXI. Annual Meeting held at Hastings, Aug., 1884, pp. 628, 8vo.

ANNUAL REPORT AND STATEMENTS OF THE CHIEF OF THE BUREAU OF STATISTICS on the Commerce and Navigation of the United States for the Fiscal Year ending June 30th, 1884. *Foreign Commerce.* Washington, 1884, pp. 1045, 8vo.

THIRD ANNUAL REPORT OF THE ILLINOIS BOARD OF PHARMACY, with Abstract of State Pharmacy Register, 1884, pp. 78, 8vo.

THIS volume contains, besides an introductory chapter, the Minutes of the Board and lists of Registered Pharmacists (3,058) and Assistant Pharmacists (762), and a copy of the Act regulating the practice of pharmacy in Illinois, adopted May 30th, 1881.

THE DIAGNOSIS AND TREATMENT OF CHRONIC NASAL CATARRH, etc. By GEORGE M. LEFFERTS, A.M., M.D., of New York, Professor, etc. St. Louis: Lambert & Co., pp. 49. 33 Illustrations.

THIS is a reprint of three clinical lectures delivered at the College of Physicians and Surgeons, New York, and reprinted from the *Medical News*, of Philadelphia, and the "American Clinical Lectures" of New York. It is well adapted as a manual for instructing the instruments customarily used in the treatment of this affection.

RETAIL DRUGGIST'S DIARY AND WANT-BOOK. Detroit: F. Stearns,

THIS second edition of Mr. Stearns' admirable work contains sixteen pages of important tables and information, fifty-two pages of diary, with space for each day of the year for entering memoranda, twelve pages of want-book, for entering wants and purchases, and a priced pharmaceutical catalogue of one hundred pages,

comprising over 14,000 items, and 874 illustrations, and ninety-eight pages of priced catalogue, with 194 illustrations of "non-secret" medicines, toilet and other articles.

ONE HUNDRED YEARS OF PUBLISHING, 1785-1885. Philadelphia: Lea Brothers & Co. Pp. 20.

THIS is a sumptuously-published history of the well-known Philadelphia firm, which originated with Mathew Carey, born in Dublin, in 1759, who



What the Drug Business may come to in New York if the Excise Board has its way.

fled to this country in 1784 to avoid political persecution, and who commenced business with four hundred dollars, generously loaned him by Lafayette, who was then visiting at Mount Vernon. The narration is exceedingly interesting in many particulars, and is one of which the descendants of Mathew Carey have just reason to be proud.

TRANSACTIONS OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. Third Series, Vol. VII., Philadelphia, 1884. Pp. 326, 8vo.

BESIDES the customary lists of officers, fellows, etc., the volume contains sixteen papers on a great variety of topics, and among them the paper by Dr. Henry Leffmann on "Criticism from a Chemical Point of View on Some Favorite Prescriptions," an abstract of which we have already published. "A study of the Nutritive Value of Branny Foods," by Drs. N. A. Randolph and A. E. Roussel, and "The Composition and Methods of Analysis of Human Milk," by Prof. Albert R. Leeds, would also prove of interest to many of our readers.

THE CALENDAR OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN: 1885. London, 1885. Pp. 519, 8vo. THIS volume contains not only a catalogue of the membership of the society, but a large amount of information relative to the intricate legislation and other enactments with which our confrères apparently delight to surround themselves. There is also an extended report of the Benevolent Fund, and very complete information respecting the Schools of Pharmacy and the modes of instruction, examinations, prizes, etc., etc.

THIRD ANNUAL REPORT OF THE ILLINOIS BOARD OF PHARMACY. With abstract of State Pharmacy Register, 1884, pp. 78, 8vo.

BESIDES a summary of the business of the Board the report contains its minutes, in detail, list of cases prosecuted during the year ending June 30th, 1884, a list of the registered pharmacists (3,058) and assistant pharmacists (762) in the State, and a copy of the pharmacy law approved May 30th, 1881.

The work is worthy of being a model for pharmacy-boards of other States.

PERSONALS.

William A. Gellatly died February 13th at his home in Llewellyn Park, N. J. He was a partner of the house of W. H. Schieffelin & Co., wholesale druggists, of No. 170 William street. He was born in Edinburgh fifty-four years ago, and his parents came to this country in 1835. When he was thirteen years of age, the firm of Schieffelin & Co. was in control of H. H. Schieffelin, with whom Mr. Gellatly obtained employment as an errand boy. He attended the College of Pharmacy for two years.

In 1860 he became a partner in the house, and when it reorganized in 1865 under W. H. Schieffelin, the great-grandson of its founder, Mr. Gellatly took the second place in the partnership. At the annual meeting of the National Wholesale Druggists' Association, held in this city two years ago, he succeeded Horace A. Benton, of Cleveland, as President, the first Eastern man to whom this honor was given.

Mr. Gellatly was a prominent member of the Chamber of Commerce and the American Pharmaceutical Association, and a Director of the Board of Trade and Transportation. He formerly lived in Brooklyn, but moved ten years ago to Llewellyn Park. His death was caused by pneumonia.

Dr. Christopher Columbus Graham, of Louisville, Ky., who died in that city on the 3d of February, was one hundred years old in Oct., 1884.

George Matthews, the senior member of the well-known firm of manufacturers of carbonated beverages and apparatus, died in this city, of pneumonia, on Sunday, Feb. 15th. His son was already sick of the same disease when he was attacked, and on the day preceding Mr. Matthews' death his wife was also attacked, and she survived him but a day.

Mr. Matthews was fifty-one years old, and succeeded his father, John Matthews, in his business, which developed gradually from an ordinary machine-shop into the particular line which has made his name known all over the country. The firm is fifty-two years old. Shortly before his death Mr. Matthews admitted his sons George and John into partnership, and the business will be carried on by them.

Apothecaries in the Army and Navy.—The House of Representatives Bill No. 8017 provides: I., That apothecaries of both army and navy shall receive a commission, those of the army to have the relative rank of a second lieutenant of infantry; those of the navy to have the relative rank of an ensign. II., That they shall not be in the line of promotion. III., That they shall receive the pay and emoluments of said grades in their respective branches of the service. IV., That they shall not be entitled to any of the benefits that may be conferred by this act until they have passed a satisfactory examination in elementary chemistry, materia medica, pharmacy and botany. V., That each and every apothecary who shall be serving in such capacity at the time of the passage of this act shall be granted, and if found proficient in the above-mentioned branches, shall receive a commission in that branch of the service to which he may be attached.

American Druggist

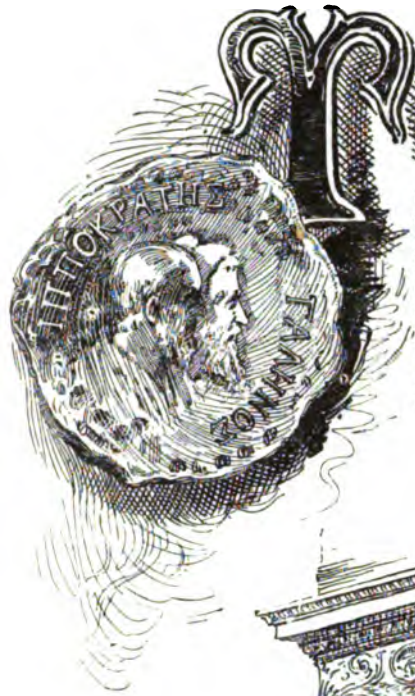
Vol. XIV. No. 4.

NEW YORK, APRIL, 1885.

Whole No. 130.

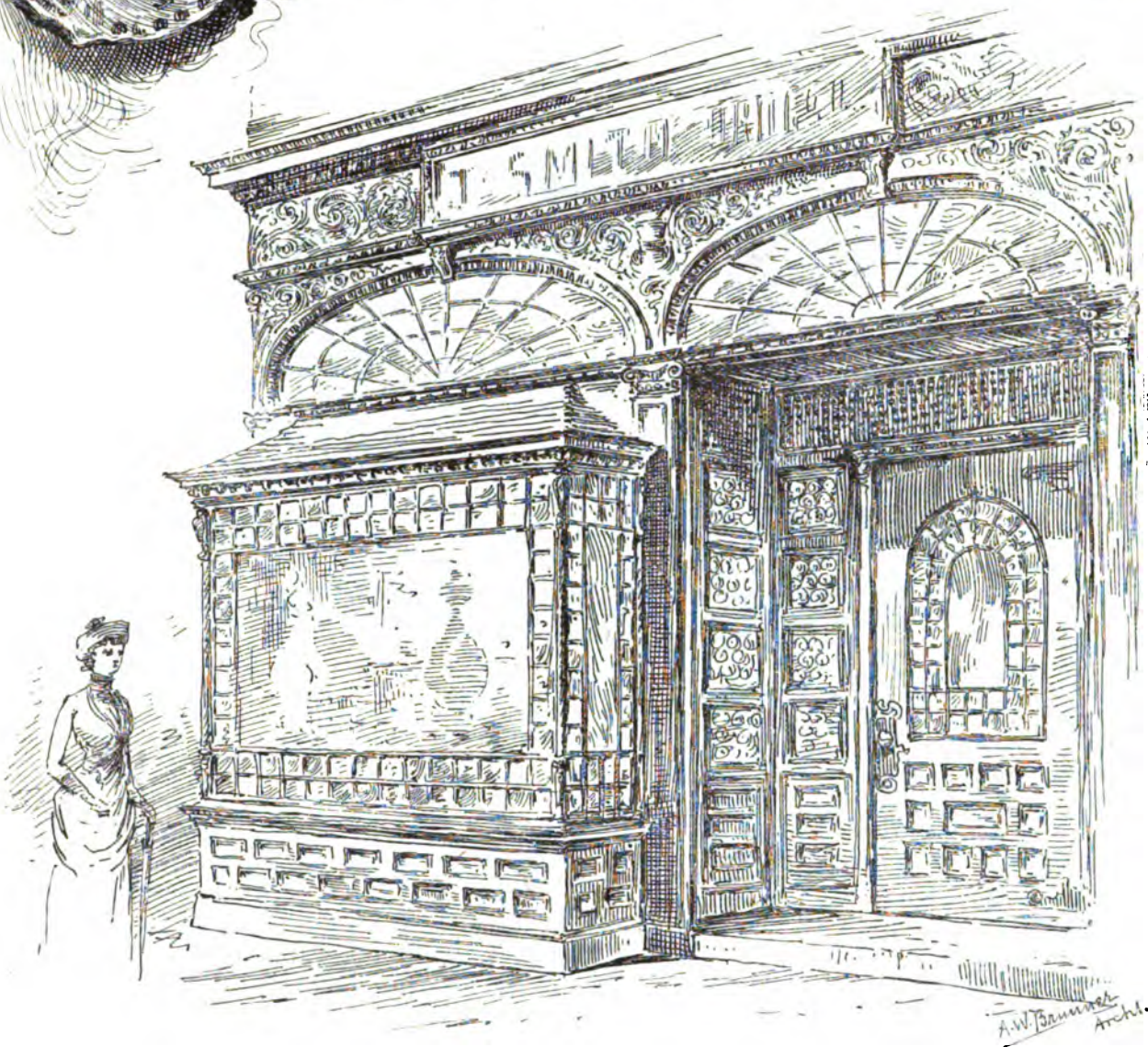
[ORIGINAL COMMUNICATIONS.]

THE ARCHITECTURE AND ARRANGEMENT OF DRUG-STORES.



THE internal economy of the drug-store, in its material aspect, may be considered from various standpoints. There is the fundamental standpoint of necessity; the auxiliary one of decoration. Necessity includes the different arrangements and objects indispensable to the various exigencies of the establishment or its trade.

deep and narrow, this scheme serves as the ground plan of the interior architecture. Sometimes, another desk, known as the approach desk, breaks the monotonous length of the store; intervening between the door and the prescription desk. This, however, is not an essential of the drug-store equipment, whereas the prescription desk is one of the most important factors in the scheme of necessity. In New York drug-stores, the prescription desk is usually found at what appears to be the extreme rear of the store, so that a person looking in at the window or door would fancy that the large and imposing object which extends across the width of the establishment formed one of its boundaries. With what lies behind the prescription desk, the general public is not immediately concerned. It is the abode of pharmaceutical mysteries as well as of pharmaceutical convivialities. This desk, from its significance, no less than its material importance, should be carefully selected as to form, color, size, and general character. It may be massive and monumental, or light and airy. It may wear a clock upon its brow like a coronet, or it may be finished with a florid wooden decoration. It may have large medicine-pots in rows on its shelves or merely glass cases, in which small perfume



Decoration implies the most pleasing presentation of the essential forms and elements in the scheme of necessity. Let us first consider the question of necessity, under which head, as a practical application of the principle, we may regard the disposition of objects in the store, and the general divisions of the allotted space. Architecturally, the first consideration is convenience, which includes making the most of every square foot of ground, and placing the windows and doors where they will serve their purpose best, and occupy the least of the interior space.

Observation of drug-stores in general shows us that every store, in which the retail goods trade is combined with the prescription business, is divided into two parts—the store proper, and the pharmaceutical regions in the rear. These are usually separated by a prescription desk. This conventional plan of interior arrangement is, of course, modified according to circumstances, but it is safe to assert that, in most city drug-stores, which are apt to be

bottles display themselves alluringly. A simple but good model in light cherry wood has square panels of "Lincrusta Walton" inserted in the wood on each side of the open space in the middle. The panels are skilful imitations of bas-reliefs in brass and copper, of excellent design, and in color and tone they harmonize well with the wood. It is always necessary that decorative accessories employed in this way should form a harmonious union, in all respects, with the substances to which they are applied.

An excellent example of a prescription desk of an imposing character is found in an accompanying illustration. This is an elaborate and massive piece of furniture. In a well-arranged and consistently decorated drug-store, the prescription desk, as being the most conspicuous and important article in the scheme of necessity, may give the keynote of decoration as to color, form and style, the kind of wood to be used in the other accessories of the establishment, and so on. The desk here presented is certainly a handsome piece of furniture. The broad and comfortable

seat upon which the customer may repose himself, while he is waiting to have his prescription made up, the fine plate-glass window or mirror above the rows of conveniently placed shelves, all contribute to the practical usefulness of the design. In form and style it is very good, decorative in appearance, and appropriate to its use. It appears to be made of some solid and substantial wood. Whatever this wood in kind or color, it should, if possible, be used throughout the store wherever wood is required in the fittings. If oak, oak should be employed for the closets or shelves that extend along the sides of every drug-store, the friezes and cornices, the dividing columns, the other desks, chairs and long seats, and wall-panels. It would not be in good decorative taste to use an elaborate and costly prescription desk, say of solid oak, black walnut, or some other rich wood, and have the rest of the store fitted up in common pine painted white. If the prescription desk be florid and ornamental in style, the other accessories should have the same character.

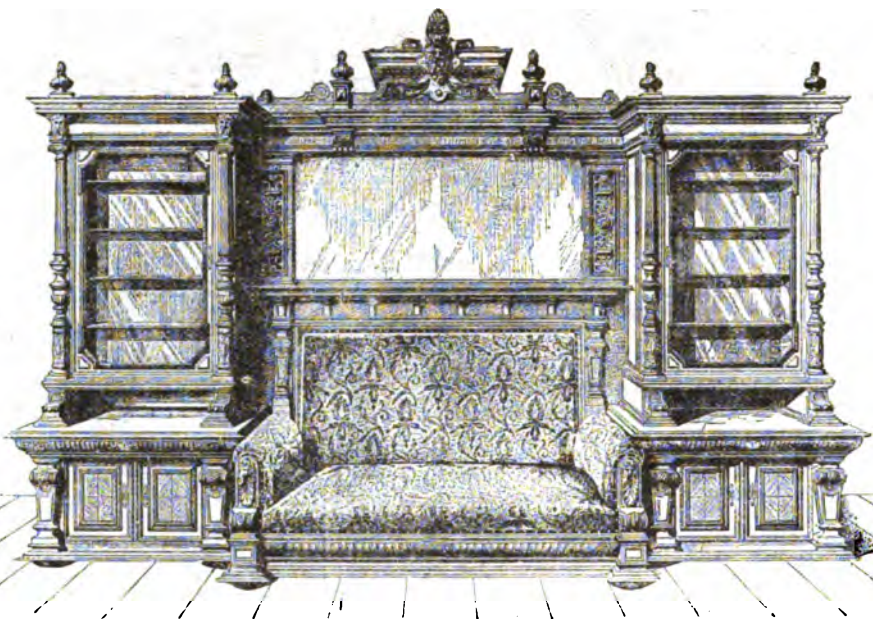
As regards the question of interior arrangement irrespective of intentional decoration, valuable suggestions may be gathered from the study of the two illustrations showing the value of the arch in modern shop architecture, which are here presented. In both of these designs, the store is divided by an arched doorway which combines beauty and grace with general convenience. In remodeling a store or apartment which consisted of two rooms, into a drug-store, instead of removing the dividing wall or partition after the ordinary manner, it would be much better to cut away only the middle of the wall and form a wide open doorway. This is illustrated in the design in which a decorative jar with palms growing in it is

seen at the right. There is considerable elegance in this bit of interior architecture, visible elegance of form and suggestive elegance of color. In form, the prevalence of straight lines and rectangles observable in the composition forms a ground note of strength and substantiality, in ceiling, doorway, side cupboards, and in the case of shelves seen beyond. The presence of the graceful, long low arch, with its interior scrolls, the rounded jar-forms, the curves of the palm-leaves and the stand, the long flowing lines of the *portière*, save the design from anything like harshness and bring all its parts into symmetrical relation. The leading ideas of form which are found in this illustration are epitomized in the long curve of the arch, and the wide horizontal band of velvet or plush that extends across its base, under the shelf on which rest various small jars. The color, in this illustration, is of course chiefly imaginary, but the artistic eye can at a glance construct a scheme of color-decoration, which shall be partly suggested by the forms, and will enter into harmonious relations with them. To begin with, so elaborate a design, as regards architecture and form, should be executed in rich and solid materials. Oak would be a desirable wood to use for the cupboards and shelves, the finishings of the arch, and possibly the divisions of the ceiling.

This is, in color, a sort of indefinite amber yellow of excellent tone. The scroll work in the arch might be either of bronze, brass or copper, according to its color relations with the rest of the scheme, and especially the *portières* which would be most effective in dark green or dark red velvet, forming a strong contrast of tone, as well as of color, with the oak. Bronze scroll-work would be the most conducive to unity of effect, and the jar and pedestal under the dark green palm should then be, if possible, of bronze of the same tone. The bits of pottery used decoratively in this illustration should be dark and rich in color and tone. It will seen from these details that the color-scheme most appropriate to this arrangement of forms is one noticeable for simplicity and breadth. We have the broad light masses of the oak, and the broad dark masses of the velvets, bronzes, and palm-leaves. The judicious management of cross-lights coming from different parts of the two divisions of the store, and centering about the open archway, unites the two strongly opposed color masses in an even neutrality of tone. If dark woods be used instead of oak, it would be well to have *portières* light in color and material, to use brasswork instead of bronze, and light-colored pottery and pale green plants instead of dark,

yellow in it. We will assume, that, in this pleasing design all the wood-work is of this color. The window seen in the background and the space under the arch dividing the rooms are both filled in with colored decorative glass, that fact being indicated by the management of the lines in the illustration. The glass may be of several different varieties, colors, designs, and shapes, provided they all tone harmoniously into the general effect. Red and yellow glass, the pale green that imitates early glass, small mosaics of glass studded with jewels and pictorial glass can all be used in this scheme, being all more or less in the same line of color as the orange red cherry-wood which forms the chromatic keynote. The pieces of pottery used as decorations should have the same quality of color; brilliant blues and reds into which yellow enters or monochrome yellow should receive the preference. The curtain should be of light texture—raw or Indian silk. Velvet is too heavy for unity of effect in so joyous and gay a decorative scheme. In color, yellow or red, used either together or monochromatically, would be desirable. A brocaded silk curtain, giving the same mingling of colors as the kaleidoscopic glass windows, would not be out of place. A cherry wood

floor or one painted to simulate cherry wood is essential to the artistic completeness of this scheme. The bright red, green, yellow, and blue bottles of colored liquid that form the conventional ornaments of the druggist's window work in very nicely with this scheme of decoration. The best kind for a window broken up into small spaces of color is that which has a cluster of small bottles at the top and a larger bottle below, the whole being framed in shining ornamental brass or copper. If metal-work be used in this scheme, copper is preferable from



the idea being to pay due regard to that law of color-contrast which is one of the fundamental principles of artistic decoration. Whatever scheme of color be used according to the form-suggestions of this illustration, small, irrelevant masses of color should be carefully avoided, and the two broad general ideas of color and tone requisite for the desired contrast as nearly adhered to as possible. This scheme of architectural necessity and decoration admits of no pettiness, triviality, or artistic coquetry. It must be taken *au grand sérieux*, in order to reveal its highest possibilities.

The other scheme of decoration herewith presented, should be handled in a directly opposite manner. In form and in consequent suggestion of color, it admits of caprices, fantasy, and decorative coquettishness. It will bear a small carnival of color without injury to its elements of form. It is broken up into small detached masses, and this idea is carried out consistently, from the panes of glass in the window and archway, down to the twisted cables into which are shaped the legs of the various cases and chairs. The most suitable wood for a similar scheme is red cherry, which is now largely used in drug-store interior arrangements. It lends itself harmoniously in color to a rather light and gay scheme of decoration, being of a brilliant red with suggestions of

its harmony of color and tone with the rest of the elements. Dark red leather, or stamped Japanese leather should be used for the chairs and other seats, the woodwork of course being of cherry, or, if needs must be, a good imitation of it. This is a bright, attractive scheme of decoration for a popular drug-store, neither expensive nor over-ambitious, but one that suits the demands of the average druggist better than most of the schemes suggested by amateur or professional decorators.

The large illustration on the front page gives the external architecture of the drug store in which the scheme of interior decoration just described is employed. Its harmony and appropriateness strike the eye at a glance. The window arch, seen in the illustration of the interior, is here viewed from the outside. That over the door corresponds with the one between the two divisions of the interior. We have in this exterior the same small irregular masses of color and form as in the scheme of interior decoration, the broken chromatic effects, the different kinds of ornamental glass, of metal work, and the general character of fantastic coquetry and caprice in architecture. This is a really beautiful design—consistent and united in impression, sufficiently broad and firm as a whole and wearing its mass of elaborate ornamentation lightly and

gracefully, keeping it properly subordinated to the plan of the whole. The architect has followed the dictates of necessity by using the space accorded him to the best advantage. He has advanced the window and retired the door, thus giving the whole front character and prominence. In general arrangement, he has judiciously combined rectangles and straight lines with curves. The excellent disposition of the window with its border of small panes of colored glass and its one large pane, through which the interior is visible, merits notice. This idea, slightly modified, is repeated in the door. The carving of the frieze and of the spaces above and between the arches is very graceful. Curved lines and scrolls predominate, in contrast with the angles and straight lines of the lower part of the design, offering the idea of grace superadded to a foundation of strength. The mortar and pestle, the conventional symbol of the pharmacist, are very neatly introduced into the carving between the arches and above the middle column. The portion of the frieze bearing the name is managed with much skill.

The question of color in drug-stores is one that demands careful study and consideration.

Every drug-store should be pitched in a certain key of color which should be relatively regarded in every accessory and detail. It is not necessary that the keynote should be struck by any one object, but whatever object be chosen to lead the rest, its leadership should be consistently recognized and followed. If, in remodelling or refitting his store, the druggist remembers that he owns a handsome set of cherry-wood cases—a brilliant orange-red in color—he would scarcely wish to fresco his ceiling in light blues or rose-pinks, or to paper his walls with a design in crimson-red.

He would rather regard his cherry-wood fittings as the color keynote of his scheme and carry it out through all the component parts. If the druggist, for example, moved into a store that was handsomely papered, he would do well to take the colors and the tone of walls and ceiling for the keynote of his decorative scheme and make all the other elements harmonize with them or else contrast agreeably. Where curtains and *portières* are used in dividing the sections of a drugstore, they should be chosen with great care, both as to color and texture. Any decorative material is permissible within certain restrictions; but cheap, tawdry and pretentious fabrics, especially those verging on the brocaded damask order, should be shunned. Just now, there is a sort of epidemic of this kind of material, and the person who aims at good decoration should avoid it. Among lighter fabrics, he can always fall back upon Indian silk, an essentially artistic material, beautifully pure in color and forming graceful folds, whatever its arrangement may be. Plushes of good color and silken texture make sumptuous hang-

ings, and English velveteens, which look almost like silk velvet, have a rich look, used as curtains, especially in dark colors. Gold and silver fringes add much to their effect. There are many inexpensive oriental fabrics which make admirable hangings. They may have been manufactured at Bradford, England, but in any case they have the stamp of the East upon them and are vastly preferable to the American imitations of them which are found at every large dry-goods store and every upholsterer's and are freely used in domestic furnishings by many misguided householders. India (Delhi) shawls can be used as *portières* and are very handsome in that relation. They are supposedly genuine at the low prices at which they are advertised by New York firms, from time to time. A good decorator or a good collector of *bric-à-brac*, which means about the same thing, bides his time and keeps his eyes open for bargains and "picks up" as he goes on.

of course, depends upon the architecture of the establishment. The keynote of color may be struck by the *portière* and everything else in the store may be keyed up or down to meet it.

An original device in drug-store decoration would be the development of a single decorative idea, say the Japanese, the Egyptian, renaissance, or the American colonial. This fashion is much followed at the present time in the decoration of dwelling-houses, and the same principles may be appropriately applied to drug-store adornment. A drug-store fitted up in Japanese style would be extremely attractive. The scheme might be made elaborate and costly, or simple and inexpensive, according to circumstances. A good scheme for a small narrow drug-store had the cases and wall-fittings in white maple—a graceful, unobtrusive kind of wood of a mottled cream-color. The walls were covered with a paper in which pale yellows and browns pre-

dominated. On the ceiling the same colors were found in broader masses and combinations. In the small window were the usual brilliantly colored bottles, with different harmonizing objects tastefully disposed about them. The soda-water apparatus was of neutral-tinted marbles, and the counter before it was hollowed out to economize space. A good bit of decoration was formed by a brass wire object, several feet high, and shaped like a squat obelisk, which was full of sponges. This was placed between the window and the soda-water counter.

The prescription desk showed a rather neat arrangement. It was of white maple, simple and light in style, harmonizing with the character of the wood. It completely separated the store proper from the laboratory behind, and entirely concealed it. The lower part on either side consisted of inclosed shelves, containing perfume bottles and similar goods. A fine plate-glass mirror, over two feet

wide, extended to the top of the desk, giving a long and narrow effect, and reflecting everything that passed, the door being directly opposite. On either side of the upper part of the mirror, above the cases of perfume bottles, was an alcove draped with small curtains of dark red and dark green velvet, bordered with gold fringe and looped back like window curtains. Each alcove had one dark red and one dark green curtain. In one alcove was the conventional jar filled with dark red liquid. In the other, at the left, was a corresponding jar filled with light green liquid, which gleamed and wavered in a mysterious and alluring manner, and was as translucent as a bit of Venetian canal with the spring sunlight upon it. Looking in at the shop door or window, this green light immediately attracted one's attention, and seemed to beckon one on like a sort of drug-store Lorelei. This novel and



When he sees an India shawl advertised by a responsible New York drygoods house at twelve, fifteen, or twenty dollars, or a real Chuddar at seven, he lays a few in for decorative purposes or with an eye to future trade. These Delhi shawls are rich in color, dull orange-red generally forming the ground tone, and they would harmonize exquisitely with cherry wood. Imagine such a scheme of decoration with green plants in light bronze jars, bits of wrought copper or bronze work about doors and windows, and wall and ceiling covered with paper in which orange-red of good tone was the prevailing note. Of course, so strong a color would have to be very skilfully managed to prevent its becoming obtrusive or wearisome to the eye. More attention should be paid to the question of *portières* and curtains by druggists than has hitherto been accorded. As far as beauty is concerned, they can be made to add greatly to the attractiveness of the store. There are various ways in which they can be made useful besides dividing the store in connection with the wall-arches. This,

admirable bit of stage-effect was produced by keeping a gas-jet constantly burning behind the jar. It was not visible from the front. This prescription desk was not only a capital example of color arrangement, but it illustrated an important decorative principle in the lighting. Without this effect of light, the shadowy dusk at the back of the store would have robbed the colors of their effect, the front part of the establishment being in strong daylight. The hidden gas-jet supplied the necessary relief.

Cocaine Fungus.

MR. H. FENWICK (*Lancet*, Jan. 31st) has noticed, in a 4-per-cent solution, after keeping some time, a peculiar mould-growth, which seems to possess the power of setting up inflammation of the mucous membrane to which it is applied. He had treated fifty cases of stricture successfully with this solution, but then three patients followed who, after treatment, returned with urethritis. On examination of the solution, the mould was observed. A new solution was made, and no further complications occurred.

Preservative of Cocaine Solution.—Prof. Schnitzler, of Vienna (*Wiener Med. Presse*), after experience of one hundred cases, says he has found that glycerin in the solution prevents the formation of fungus and promotes the absorption of the cocaine, while alcohol irritates the mucous membrane. He advises a solution as follows:

	Parts.
Cocaine mur.....	2 to 5
Glycerin.....	20
Distilled Water....	80

This is applied with a camel's hair pencil two or three times. Anaesthetic action occurs in five to ten minutes, and lasts usually from twenty to thirty minutes. He has found that the addition of two per cent of morphine mur. to the above strengthens the action of the cocaine and makes it more permanent.

For insufflation for the nasal and throat passages he recommends a snuff composed 2 to 5 parts of cocaine of mur., 20 of plumb. acet., and 80 of powdered sugar, or 2 to 5 of cocaine mur., and 50 each of bismuth subnit. and sugar.—*Chem. and Drugg.*

Euphorbia Pilulifera.

As a remedy for asthma the *Euphorbia pilulifera*, or pill-bearing sponge, has of late attracted attention. The plant is indigenous in Australia (Queensland) and the tropical portions of Asia, Africa and South America. The decoction is made by steeping an ounce of the fresh or half as much of the dried weed in two quarts of water and reducing it by simmering to one quart, of which the dose is a wine-glassful to three or four wine-glassfuls, or of the aqueous extract one or two grains daily. The active principle appears to be a gum-resin, soluble in water or in dilute alcohol. Besides the observations of several Australian physicians, the most important paper on the remarkable effects of the remedy is that of Dr. Marsset, of the Clermont Ferrand Hospital, of Paris, who has written a *thesis* of some length on its effects on twelve cases of asthma and upon animals. It is best given after the evening meal.—J. CHRISTY.

The Deaths from Patent Medicines are estimated by a writer in the *British Medical Journal* to be about one hundred and fifty thousand annually.

NOTES ON PRACTICAL PHARMACY.*

(Continued from page 29.)

EMULSIONS.

THE word emulsion (*emulsio*, *emulsum*) designates the intimate fluid mixture of mucilaginous or resinous substances and water with oils, fatty, or resinous materials. An emulsion is turbid and has a milky appearance. According to the materials from which they are prepared, we distinguish seed, oil, balsam, gum-resin, resin, wax, and spermaceti emulsions. Seed emulsions, as true emulsions, are also differentiated from the others, spurious emulsions.

SEED EMULSIONS

are prepared from oleaginous seeds, for instance, almonds, poppy seed, hemp seed, henbane seed, carduus benedictus, etc., by crushing and trituration with water. The seed is washed several times with water in order to remove any adhering dust. This is done in the same mortar in

The albuminous and mucilaginous substances contained in the seed envelop and hold in suspension, in the water, the oil of the seed divided into very minute droplets. When the seed is crushed or rubbed to pieces without being moistened, a portion of its oil is expressed, and though it at first mixes with the emulsion, it soon gives rise to the separation of a fatty cream when at rest. Emulsions of poppy seeds and almonds have the color of good cow's milk. Almond emulsions are always made from decorticated almonds unless the physician objects [which would be pure pedantry on the part of the latter]. In order to remove the skin, which imparts to the emulsion a rather acrid taste and bad color, there is poured over the almonds hot water of at most 60-70° C. [140-158° F.] which is immediately poured off again as soon as the skin can be easily stripped off by pressure with the finger. Decorticated almonds give a pure white emulsion. *Emulsio amygdalina* is prepared from one (1) part of almonds and sufficient water to bring the strained product to ten (10) parts.

Poppy seed, *Semen Papaveris album*, when to be used for an emulsion, is soaked for five or ten minutes in warm (not hot) water so as to soften it somewhat, because when dry it is very hard and would necessitate prolonged pounding. It is self-evident that the seed, which is still moist after the water has been poured off, requires no addition of water during the crushing. Ten (10) parts of *emulsio sem. Papaveris* are prepared from one (1) part of the seed.

Emulsion mortar. Seed emulsions are prepared in brass, marble, or porcelain mortars. In iron mortars they become gray. Brass mortars, of course, must be scrubbed very bright, but it is better not to use them for emulsions. Marble mortars have a wooden pestle, but it is preferred not to use them, as they are not durable; there have

been in the market, however, for the past twenty years mortars shaped like those for crushing, which are made of a peculiar, exceedingly hard and strong porcelain-like mass, known as *emulsion mortars*. They are ten to twenty centimetres high and have a pestle of boxwood so that the seed can be crushed by vigorous blows without endangering the mortar. [The author means "Wedgewood" ware or something akin to it. Emulsion mortars have a deeper and more concave bottom than those used for trituration.]

Straining causes a slight loss of weight of the fluid. The allowance for this loss is half the weight of the seed.

Where the quantity of the seed is not given, take one part of seed for ten parts of the strained product. This agrees with the directions of the German Pharmacopœia.

Seed emulsions must neither be brought to a high heat nor be mixed with very hot fluids, because this would coagulate the vegetable albumin and thus hasten the spoiling of the emulsion. Many of the concentrated acids likewise coagulate the albumin, hence they should always be diluted with three to five times the amount of water. This should be done also with alcoholic non-resinous additions.

R Amygdalæ dulcis...	20 Gm.	300 gr.
Amygdalæ amaræ,	5 "	75 gr.
Aq. destill.....	150 "	5 fl.oz.
Aq. aurantii florum	50 "	1½ "

which the emulsion is prepared. Some water, about one part to ten of seed, is poured over the cleaned seed, and the latter comminuted by crushing and friction until a sample, when taken out, can no longer be felt between the fingers to contain any palpable particles of the albuminous body of the seed. The seed now forms a soft doughy mass which is divided by trituration and stirring in the required quantity of cold water (infusion, decoction), which is to be added by degrees in small portions under agitation. When this is done, the whole is strained. The latter operation is best effected through milling (bolting cloth) or through loose-meshed linen, but stained cloths must not be used for white emulsions. The most important points about the cleaning of milling strainers have been given above.

* The basis of this series of papers is the latest edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany, and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.



Fiat emulsio, cui adde
Extracti Hyoscyami 1 Gm. | 15 gr.
Syrupi 25 " | 5 fl.dr.
M. D. S. Tablespoonful every two hours.

The strained product must amount to 200 Gm. [about 8 fl. oz.]. The almonds (which need not be decorticated, an extract being added) are moistened with 3 Gm. of the water, crushed to an impalpable mass, and made into an emulsion with the water. The extract is dissolved in some of the emulsion, or added in solution.

SEED EMULSIONS WITH FATTY OILS.

The emulsification of a fluid fatty oil by means of an albuminous and oleaginous seed is effected thus: The seed, moistened with water, is rubbed to a soft dough in an emulsion mortar, then the oil is added in small portions, together with very small quantities of water, under agitation, until a homogeneous mass results, which is gradually diluted with the remaining water, and strained through dampened milling (nettle cloth) or straining muslin. That in the present case there is a double emulsion cannot be questioned.

R Amygdalæ dulcis. 20 Gm. 300 gr.
Olei Ricini 30 " 7 fl. 3
Aq. Fœniculi,
Aq. destillatæ,
ana 100 " 3 fl. oz.
Sodii nitratis 15 " 240 gr.
Syrupi 25 " 5 fl. 3
M. Fiat emulsio.

Not unfrequently the prescription directs a simple mixture of a seed emulsion with a fatty oil. For instance:

R Emuls. Amygdalæ 150 Gm ab. 4 fl. oz.
Olei Ricini 25 " 6 fl. 3
Sacchari 15 " 240 gr.
M. D. S. Shake vigorously. Tablespoonful every two hours.

The text of this prescription demands merely a mixture of the oil with the emulsion, which mixture is prepared equably by the dispenser by vigorous agitation. Emulsification of the oil would be admissible only after consulting the prescriber.

OIL AND BALSAM EMULSIONS.

The fatty oils such as *Oleum Amygdalæ expressum*, *Papaveris*, *Olivæ*, *Lini*, *Morrhue*, *Ricini* and the balsams—*Balsamum Copaibæ* and *Peruvianum*—cannot be formed into intimate mixtures with water, but this is very easily effected by a mucilaginous adjuvant (emulgent), best by mucilage of acacia, which envelope the particles of oil, and is capable of holding them permanently in suspension in the aqueous liquid. Yolk of egg and mucilage of tragacanth also belong to the emulgents. Should a smaller quantity of gum arabic be used than one-fourth of the oil or balsam, the emulsion will not be very stable, and will fail altogether with some oils; on the other hand, more than half the amount of the oil is never taken of gum arabic for the preparation of an emulsion, the remainder of the prescribed gum being added as mucilage to the finished emulsion. If this fact be well borne in mind, the preparation of every oil or balsam emulsion will succeed, provided the quantity of water be half of the total weight of the gum and the oil of balsam. For instance, 4 parts of *Oleum Amygdalæ* and 1 part of gum arabic are to be emulsified with water. The total weight of the two substances is 5: half of five is 2½. [Hence we have the following proportion, which should be fixed firmly in the memory:]

1. Lowest proportion :
Oil 4 parts, } total, 5 parts.
Gum 1 part, }
Water 2½ "
2. Highest proportion :
Oil of Balsam 4 parts, } total, 6 parts.
Gum 2 " }
Water 3 " }

It is calculated that the emulsifying power of 10 Gm. of gum arabic equals that of one yolk of a large hen's egg, or of 1.25 Gm. [20 grains] of tragacanth, or of 1 Gm. [15 grains] of salep.

The preparation of an oil or balsam emulsion can be done in one of three ways.

The first and most certain for all cases is to thoroughly mix the powdered gum with the water in a wide mixture mortar, by agitation with a broad pestle; after this has been done, add the oil or balsam at once, and emulsify it by continued agitation, during which any of the thick mucilage or oil adhering to the pestle or the wall of the mortar must be scraped off and mixed with the emulsion. In two or three minutes the emulsion is finished.

If the above proportion of the components of the emulsion is strictly maintained, the emulsion will not separate or spoil.

The second method is to place the gum into the mortar, pour the oil or balsam upon it, and then add the water in such a way that it, as it were, is enveloped by the oil, and does not touch the gum. The three substances are then emulsified by sudden and rapid agitation.

The third method is to triturate the oil or balsam in the mortar with the gum, then to add the water at once and triturate.

The following table, giving the quantities of gum, water, oil or balsam necessary for an emulsion, will be found convenient.

Balsam or oil emulsion. Parts.	Balsam or Oil. Parts.	Gum arabic. Parts.	Water for the preparation of the emulsion. Parts.	Water to complete the emulsion. Parts.
250.0	25.0	12.5	18.75	193.75
240.0	24.0	12.0	18.0	186.0
200.0	20.0	10.0	15.0	155.0
180.0	18.0	9.0	13.5	139.5
175.0	17.5	8.75	13.12	135.88
160.0	16.0	8.0	12.0	124.0
150.0	15.0	7.5	11.25	116.25
135.0	12.5	6.25	9.33	96.87
120.0	12.0	6.0	9.0	93.0
100.0	10.0	5.0	7.5	77.5
90.0	9.0	4.5	6.75	67.75
80.0	8.0	4.0	6.0	62.0
75.0	7.5	3.75	5.62	58.13
60.0	6.0	3.0	4.5	46.5
50.0	5.0	2.5	3.75	38.75
40.0	4.0	2.0	3.0	31.0
30.0	3.0	1.5	2.25	23.25
25.0	2.5	1.25	1.87	19.38

Of the above described three methods of preparing an oil emulsion, the experienced usually prefer the second.

[Those who have never made many emulsions, and would like to acquire proficiency, may exercise themselves in trying the three methods above given, and select that which succeeds best in their hands. There is great difference in the relative success attending these methods in the hands of self-taught dispensers. Proper training, under the eye of a competent pharmacist, of course, will make any single process successful. Those who are already accustomed to use a certain process, are advised to adhere to it, and not to try new methods rashly.]

The Joint Committee which published the New York and Brooklyn Formulary, gave a standard formula for a *Stock Emulsion of Cod-Liver Oil* (Emulsio Olei Morrhue Fortior), which was to be kept in stock and needed only completion by the addition of such ingredients as the physician might wish to order. This emulsion was ordered to be prepared from 2 av. oz. of powdered Acacia, 4 av. oz. of powdered Sugar, 16 fl. oz. of Cod-Liver Oil, and enough water to make 28 fl. oz. An improvement in manipulation was subsequently suggested by Mr. Theodore

Louis, of New York, which has rendered the process one of the most successful and advantageous ones, inasmuch as its execution not only requires but a short time (10 to 15 minutes), but is not even interfered with by interruptions during the manipulation. The improved process is as follows:

Acacia, in fine powder, 2 av. oz.
Sugar, in fine powder, 4 av. oz.
Cod-Liver Oil 16 fl. oz.
Water, 8 fl. oz., or enough to make, 28 fl. oz.

With the Acacia, 4 fluid ounces of the Cod-Liver Oil and 3 fluid ounces of Water, prepare an emulsion in the usual manner. Mix with it the Sugar, and then add gradually, triturating well during each addition, alternate portions of the remainder of the water and of the oil in quantities of about 1 or 2 oz. at a time.

The result is a perfect and faultless emulsion.

While a properly shaped mortar is probably the best form of apparatus for preparing emulsions on a small scale, there are other ways in which excellent emulsions may be prepared. One of the best is that proposed by Hartwig, in 1875, who recommends a vaginal syringe for mixing the ingredients of the emulsion. This certainly produces, in a comparatively short time, a very good and uniform emulsion of a beautiful creamy consistence, but does not appear to be applicable to all kinds of oils equally well. It is very good indeed, for cod-liver and almond oil.

Other mechanical appliances, such as butter-churns, mixing machines, egg-beaters, etc., have also been suggested and used with good success. Such or similar appliances will necessarily have to be resorted to when emulsions have to be made on a large scale.

Fixed Oil Emulsions may also be produced by the intervention of other agents, besides gum arabic or tragacanth. One of the best of these is Irish Moss, and there are several proprietary emulsions on the market which are prepared with this.

According to Dr. A. B. Huested (see NEW REM., 1881, 194, where "Irish Moss" should be substituted in the title for "Iceland Moss"), a mucilage made from 2 drachms of Irish Moss to 16 fl. oz. of finished mucilage, is preferable for cod-liver oil, and the same amount of moss for 12 fl. oz. of emulsion of castor oil. These emulsions may be made to contain 50 per cent, and over, of oil.

Contrary to what is the case with gum emulsions, the presence of glycerin appears to contribute to the stability of this kind of emulsion. The addition of a little common salt to the emulsion likewise tends towards its preservation. The mucilage of Irish moss may be kept in stock by proceeding as follows:

Irish Moss 4 troy cz.
Water q. s.
Glycerin 48 fl. oz.
Olive Oil q. s.

Wash the Irish Moss with 2 or 3 portions of cold water, using friction between the hands, until it is perfectly clean. Then put it into a suitable dish and pour upon it 4 gallons of water. Apply heat, gradually increasing until the boiling point is reached, continue till the moss is nearly all dissolved and the whole is reduced to about 1½ gallons. While still hot, strain through wet flannel without stirring or pressure, mix the strained liquid with the glycerin and enough water to make 2 gallons and introduce the finished product into vials, suitable for the usual daily demand of the store (4 oz., 8 oz., 16 oz., etc.), which are to be heated in a water-bath to the boiling point so as to expel all inclosed air-bubbles. Then cautiously pour a little olive oil into

each bottle, cork and seal. Thus prepared, the mucilage keeps indefinitely.

For use, agitate a definite volume of the mucilage with the prescribed quantity of oil.

Such emulsions are quite stable, though the subdivision of the oil is not as thorough and minute as when gum arabic and trituration is used.

Another suitable agent for emulsifying cod-liver oil is *Extract of Malt*. Curiously enough, there have been formerly in the market more brands of extract of malt, which yielded a satisfactory emulsion by trituration with cod-liver oil, than at the present time. One of us has repeatedly prepared such emulsions, a number of years ago, with scarcely any failure. In recent years, equal success was not attained.

Condensed milk Borden's) was recommended by Cushman in 1858, as an emulsifying agent for castor oil, the following formula being given (*Drugg. Circ.*):

Condensed Milk	$\frac{1}{2}$ z
Castor Oil	1 $\frac{3}{4}$ z
Syrup of Lemon	$\frac{1}{2}$ fl. oz.
Water	q. s.

Triturate the condensed milk with about one fl. drachm of the water, then add the oil and finally the syrup and remainder of water, with constant trituration.

Alkalies and alkaline earths have the property of converting oils into soaps. A small quantity of soap can hold in suspension a considerable amount of oil. If solution of soda, potassa, or lime, be added to fixed oil in quantity insufficient to combine with the whole oil, a homogeneous mixture containing the free oil in suspension is formed. This is, however, *not* an emulsion. Some slovenly dispensers sometimes use lime-water to facilitate emulsion. This is altogether wrong, and should not be countenanced, unless specially directed.

From a therapeutic stand-point, mild saponified oils are not objectionable, in certain cases. At all events, the pancreatic juice will more readily act on a faintly alkaline or saponified oil, than on a neutral or acid one. On the other hand, cathartic oils (like castor oil, olive oil), should never be rendered alkaline, but preferably combined with an acid, so that they may at least partly escape digestion.

An emulsion made with the aid of an alkali need not be prepared in a mortar. The alkaline solution, diluted with enough water (or aqueous solution of any salt ordered in the prescription) to about equal the volume of oil, is first put into the bottle, the oil then added, and the whole well shaken, the remaining ingredients being afterwards added.

Glyconin or glycerite of yolk of egg (see U. S. Ph. under *Glyceritum Vitelli*) is an exceedingly valuable emulsifying agent, not only for fixed, but also for volatile oils. It is merely a solution or mixture of the yolk of egg with glycerin, and if carefully kept, can be preserved unchanged for years. It is capable of emulsifying more than its own weight of cod-liver or other oils.

Experience, particularly in this country, has shown that not only are there many differences in the choice of emulsions on the part of practitioners, so that in fact the pharmacist must be acquainted with all the varieties and forms, but there also occur cases where patients become tired of a certain kind of emulsion or of the pure cod-liver oil itself, and where some other form of administration must be resorted to. It is chiefly for this reason that so many methods of preparing emulsions, or vehicles for the oil, are desirable for selection.]

When the components of the emulsion have been united into a milky, homogeneous mass showing no oil

droplets on the surface—a fact recognizable on trituration by a peculiar crackling noise—and when the mass adhering to the pestle and the wall of the mortar above the level of the emulsion, and which is perhaps insufficiently mixed, has been scraped off with a piece of cardboard and incorporated with the rest, a part of the remaining water is added gradually in small portions under continued stirring, the mixture poured into the bottle, and whatever adheres to the wall of the mortar is rinsed off with the last of the water.

The first method has been called the most certain, although excellent emulsions are made also by the other two methods, even in a shorter time. Still, in practice we meet with some rare cases in which *Oleum Ricini* and *Balsamum Copaibæ* could not be emulsified by the second and third methods, while with the first method the emulsion became perfect. The cause of this is to be sought either in the fact that in the latter two methods the gum is not brought rapidly enough into sufficient solution or that special peculiarities of some qualities of castor oil and copaiba balsam have some influence. Moreover, it should be stated that *Oleum Sesami* and other oils sophisticated with it cannot be at all or but imperfectly emulsified according to the rules above given.

[Mr. Joseph Ince has given very valuable hints on emulsions—in *Chem. and Drugg.*—from which we abstract a few points:

Let the dispenser know when he has done his task, and when once he has formed his emulsion, let him add rapidly the remaining ingredients. Many an emulsion is ruined by over-manipulation, and the incorporated oil is again thrown out by continuous and excessive stirring.

When liquids, limpid or viscous, are to be combined with an emulsion, the very gentlest manipulation should be employed. Increase of pressure generates heat, and heat is fatal to union.

The common advice to press vigorously on the bottom of the mortar will be found to be incorrect, except when a solid is to be broken down into a pulp or saponaceous mass.

When a mortar is employed, trituration must always be in a circular direction towards the dispenser, and during preparation, this direction must not be changed.

Emulsions with Mucilage of Acacia. Mr. Ince seems to prefer this to powder. Acacia. He says: 4 av. oz. of picked gum arabic are dissolved in 6 oz. (Imp. Meas.) of cold distilled water, by occasional stirring; the mucilage is strained and kept in a cool place. This is used for preparing emulsions, as for instance:

Ol. Amygdalæ expr	3 1 $\frac{1}{2}$
Mucilag. Acaciæ	3 3
Syrupl.	3 1 $\frac{1}{2}$
Aquæ destillatæ	ad 3 3

Put the whole of the mucilage into the mortar first; add the almond oil by degrees, but rapidly, with constant circular stirring in one direction from left to right. Never add a second drop of oil until the first quantity has been emulsified. This is known by the creamy character of the product, and its tendency to form clear spaces by leaving the sides of the mortar. (Study two things—quickness of motion and lightness of hand. Whatever force be applied, is a dispensing error, which, in so sure a case as in the type formula given, may be of little consequence, but which, when there is a delicate balance between the emulsifying agent and the substance to be emulsified, may upset the process altogether.) To the emulsion add the syrup and the water rapidly; of the latter, $\frac{1}{2}$ oz. at a time. Five minutes should finish the whole operation. *Slow dispensing is bad dispensing.*]

Further additions to emulsions. Not until the emulsion has been diluted with water is it permissible to dissolve in it or to add to it any salts, dry extracts, or other dry bodies, especially such as are very hygroscopic. Subjecting it to high heat should also be avoided. The rule is to dissolve such bodies in water or to triturate them with it before they are added to the emulsion. If this direction be neglected, such bodies abstract water from the concentrated emulsion, and a part of the emulsified oil separates.

Emulsions made with gum arabic thicken to a jelly when borax is added. The admixture of dilute acetic acid will render it fluid again, but such an addition is not justifiable. When the prescription calls for borax, the emulsion, if too thick, must be delivered in a pot instead of a bottle. The thickening or gelatinization, however, does not occur until several hours after the mixture is made.

If an oil emulsion with the addition of Peru balsam is demanded, the oil must be first emulsified, the balsam mixed with two-thirds of its weight of alcohol, and incorporated by agitation in the mortar.

An emulsion which has turned or separated, cannot be improved either by additions or by shaking in the bottle; that would only be waste of time. A fresh emulsion should at once be prepared.

Where the prescription leaves the quantity of gum undetermined, it is customary to take of it half of the directed oil or balsam. If the quantity of the oil or balsam is not stated either, only the amount of the emulsion, one (1) part of oil or balsam is taken for every ten (10) parts of the emulsion. This proportion has been adopted also by the German Pharmacopœia which directs:

"Oil emulsions are prepared, unless specially directed otherwise, of any oil two (2) parts; powdered gum arabic, one (1) part; and distilled water, seventeen (17) parts." [For making the emulsion itself, 1 $\frac{1}{2}$ parts of water are required; the other 15 $\frac{1}{2}$ parts are added last.]

For weighing the oils and the balsam of copaiba the German dispenser keeps peculiar vessels (opodeldoc glasses) which hold about 30 Gm. They are labelled and corked and placed behind the respective stock bottles. These bottles, after having once been used, will not fail to acquire a rancid odor in from ten to fourteen days. This fact, of course, is to be ascertained by the sense of smell before the weighing of the oil. Another clean vessel is taken while the rancid one is being cleaned. Frequent renewal of the cork is necessary. In establishments where oil emulsions are but rarely called for, it is advisable to employ every time a clean porcelain pot, which is more readily cleansed after use than a bottle, for the weighing of the oil.

Emulsions with mucilage of tragacanth are very rarely ordered. For 20 Gm. of the oil take 1 Gm. of powdered tragacanth which is first mixed with 20 Gm. of water in a mixture mortar. This mixture having stood at rest for several minutes, 20 Gm. of oil and 10 Gm. of water are added *at once* and united by continuous agitation into an emulsion which is thinned by degrees by the gradual addition of small quantities of water with continued stirring. Such emulsions do not keep long.

[The *Chem. and Drugg.* remarks here, quite correctly: "This is a mistake, as the many preparations now sold under the name of Cod-Liver Oil Emulsion, prepared with tragacanth, sufficiently testify. Tragacanth presents properties as an emulsifying agent which in many respects are unequalled for such an oil as cod-liver oil; and as a matter of fact, we have found it to keep well for many months, even in the heat of summer.

Two parts of tragacanth will be found sufficient to emulsify from 80 to 100 parts of cod-liver oil, if attention is paid to the following directions:

To 2 parts of pure white tragacanth powder add 16 parts of glycerin, and when thoroughly incorporated, add boiling water sufficient to produce complete gelatinization. Taking this as a basis, a mixture of cod-liver oil and water, or better still, cod-liver oil and lime-water, in the proportion of 2 parts of oil to 1 of water, thoroughly mixed, is gradually added in a proper mortar, and with constant stirring. The oily mixture must not be added too quickly, or before the previous addition has been thoroughly emulsified. Flavoring agents may be added.]

If the emulgent be yolk of egg which consists mainly of albumen, it is intimately mixed in the mortar with the oil or balsam without any other addition, and then thinned by the gradual admixture of small amounts of the menstruum.

If a mixture be ordered of oil and a watery fluid without the special remark to make it into an emulsion, it is understood to mean a simple mixture. But if gum or yolk of egg enter into the mixture, an emulsion is to be prepared. For instance:

R Emulsionis Amygdalæ.....	150 Gm.	ab. 4 fl. oz.
Olei Ricini.....	25 "	6 fl. 3
Syrupi.....	20 "	4 fl. 3

M. D. S., etc.

Here a simple mixture is prepared.

R Emulsionis Amygdalæ.....	120 Gm.	ab. 3½ fl. oz.
Olei Ricini.....	30 "	7 fl. 3
Acaciæ.....	7.5 "	120 gr.
Syrupi.....	15 "	240 "

M. D. S., etc.

Here the castor oil is to be emulsified by means of the gum and then mixed with the emulsion.

Alcohol, concentrated acids, also saline solutions (many metallic salts) or substances (such as tannin) which throw down or coagulate albumen or mucilage are thinned or dissolved in an appropriate amount of water before being added to the emulsion. If this precaution be neglected, the emulsion in many cases will not keep or will be decomposed at once.

GUM-RESIN EMULSIONS.

The gum-resins such as *Galbanum*, *Ammoniac*, *Myrrh*, *Gamboge*, *Assafetida*, etc., contain, besides many resins insoluble in water, a large amount of a gum-like substance, hence the addition of an emulgent is not absolutely necessary for emulsification with water. In order to emulsify with water, the cleaned gum-resin is rubbed to as fine a powder as possible in a (cold) mortar. In the warm season where this is more difficult, the operation will be facilitated by the addition of one or two drops of almond oil. Then the water is added by degrees in small portions and under stirring. When this mixture forms a uniform dough, more water is added, the milky fluid poured off into the mixture bottle, the remaining coarser sediment again rubbed small, once more emulsified with water, decanted, etc. Coarse deposited impurities are left behind.

Should, as for instance in hot summer weather, the gum-resin be too tough and soft to be rubbed to powder, it is placed in pieces in a mixture mortar, sprinkled with some water, and the mortar and pestle put in a moderately warm place until the gum-resin has acquired the consistence of honey. After adding one drop of almond oil and three drops of mucilage of acacia for every gramme of gum-resin, a uniform milky mixture is affected by strong agitation with the

pestle. By the aid of rather warm water, admixed in small portions, a good emulsion is obtained in this manner.

Usually gum or yolk of egg is ordered to facilitate the emulsification. Before being mixed with these emulgents, they must still be rubbed as small as possible. Then the gum acacia (one-half part) and an amount of water equal to that of the gum-resin, or the yolk of egg are added, intimately mixed by vigorous rubbing and then gradually diluted with water. In this case, too, the emulsion is poured off from the few coarser particles which have settled on the bottom. If the amount of gum or yolk of egg is left to the dispenser, he takes of the gum a quantity equivalent to half the weight of the gum-resin, or one yolk of egg for 20 Gm. of gum-resin. If the gum-resin is so soft that it cannot be rubbed to powder, it is made semi-fluid by moderate warming, as above mentioned, mixed with the powdered gum-arabic, diluted with warm water added in small portions, and emulsified by continuous agitation until cold. Should yolk of egg be the emulgent, the gum-resin must not be warmed above 60° C. [140° F.], otherwise the albumen in the yolk would coagulate.

[Apropos of egg-emulsions, it should be borne in mind that they require a skilful hand, the first and last requis-



Rapid Water-heater.

ite being that the dispenser should abstain from the slightest mechanical force.—Jos. Ince, in *Chem. and Drugg.*]

[The *Mistura Ferri Composita* of the U. S. Ph., is in reality a gum-resin emulsion. According to Mr. Joseph Ince (*Chem. and Drugg. Diary*), it is best to prepare it of four times the official strength, leaving out the iron until it is to be dispensed. Mr. Ince's formula, applied to the proportions of the U. S. Ph., then becomes the following:

Myrrh, in small pieces.....	216 grains
Sugar.....	216 "
Carbonate of Potassium.....	96 "
Spirit of Lavender.....	1½ fl. oz.
Rose Water.....	6 "

To make..... 27 fl. oz.

(of a stock mixture which will ultimately make 108 fl. oz. of finished product).

Beat the myrrh well, with energy, and with considerable pressure. Divide the beaten mass with the powdered sugar, add the carbonate of potassium, and make a thick creamy emulsion with just sufficient of the rose water. Let this stand, covered from the air, over night, and the following morning finish the operation. A few minutes' trituration will restore the whiteness, and such a *Mist. Ferri*

Co. will keep for some years without alteration. For use dispense it as follows :

Stock Emulsion of Myrrh 2½ fl. oz.	
Sulphate of Iron.....	24 gr.
Rose Water, enough to make.....	9 fl. oz.

Ammoniac and *Assafetida* must be converted into hydrated masses. Let them, before being manipulated, soak in a small quantity of water, when they are readily reduced to a pulpy condition, and form tolerable emulsions afterwards without any additional emulsifying agent.

Incidentally it may be remarked here that carbonate of potassium is a hostile ingredient in any emulsion when there is a second emulsifying agent—such as acacia—present. Mucilage and carbonate of potassium, when present together, prevent the emulsifying process.

Many salts, either neutral or acid, also spoil or interfere with emulsions. Alkaline salts, however, and borax, facilitate emulsions.]

[To be continued.]

RAPID WATER-HEATER.

It often occurs in a druggist's laboratory that a supply of hot water is required at short notice, and it is not always convenient to keep a fire for this special reason. We give here-with an illustration of a convenient apparatus intended to serve this purpose, which is so rapid in its action that it may be said to be almost instantaneous. It is constructed of copper, lined with tin, and is heated by means of gas. The gas-cock is so constructed that a small tube (closed by an independent stop-cock) ends in a small burner, which may be kept lighted, and serves to ignite the gas when the larger stop-cock is opened. The manufacturer guarantees that the apparatus will raise the temperature of a half-gallon of water to 212° F. in from one to one and three-quarter minutes, or a continuous stream of water may be heated from ordinary winter temperature (say 46°) to 150° F., at the rate of from 1 to 1½ gallons per minute. The size No. 1, suitable for druggists' or physicians' use, is 8 inches in diameter and 16 inches high, and costs \$30.00. J. H. Carrington, Jr., of 1146 Broadway, N. Y., is the general agent.

A New Dressing for Wounds.—M. Marc Sée has invented a fresh dressing. He has tested it three times after excision of the breast, and speaks confidently of its success. When the operation is finished, the surface of the wound is powdered with bismuth, which arrests all oozing and favors cicatrization. It is then covered with layers of cellulose impregnated with carbolic acid, upon which is placed a thick layer of cotton wool; a tarlatan bandage is then placed upon it, and an india-rubber one is superposed.

Before the dressing is completed, M. Sée places sutures both deep and superficial, and drainage-tubes which are easily removed by means of a thread which is attached to them.—*Brit. Med. Journal*.

Subsulphate of Iron (*Monssel's salt*) is recommended by Dr. E. T. Williams as a very serviceable mineral astringent in the summer diarrhoea of children, in doses of one grain, combined, if need be, with one-twelfth of a grain of opium, in powder for a child a year old. Adults can take from three to ten grains, and pills may be used instead of powder. The salt may be prepared by evaporating to dryness the official solution of the sub-sulphate.—*Boston Med. and Surg. Jour.*

The Value of Popular Disinfectants.

DRS. GEO. M. STERNBERG and J. R. DUGGAN, of the American Public Health Association, have lately reported the results of their tests of the various commercial disinfectants; "broken-down" beef-tea, containing spores of *bacillus subtilis* and *bacillus anthracis*, being the agent used for the measurement of their power.

DISINFECTANTS TESTED.

Name upon label.	Per cent in which active.	Per cent in which failed.
Little's soluble phenyle....	2	1
Labarraque's solution.....	7	5
Liquor zinci chloridi (Squibb's).....	10	7
Feucht-wagner's disinfectant.....	10	8
Phenol sodique.....	15	10
Platt's chlorides.....	20	15
Girardin disinfectant.....	25	15
Williamson's sanitary fluid	25	20
Bromo chloralum.....	25	20
Blackman disinfectant.....	30	20
Squibb's solution of impure carbolic acid (about two per cent).....	..	50
Burchard's disinfectant.....	..	50
Phenol sodique.....	..	50
Listerine.....	..	50

Regarding these disinfectants, Dr. Sternberg adds: "Returning to the disinfectants in our list, it will be seen that all but the four last-named are efficient in various amounts, ranging from 30 to 2 per cent. But the relative value of the agents as here given does not establish their comparative practical value as disinfectants. Questions of cost, physical and chemical properties, etc., come into the account which it is the province of other members of our committee to consider. The agent at the head of the list, for example, notwithstanding its superior germicide power, does not seem to me to be as useful as some of those below it, on account of its insolubility and comparatively high price.

"We have nothing to say against the use of any of the agents in our list as antiseptics or as deodorizers. No doubt all of them are more or less useful for this purpose, and we have no desire to restrict their use. But the exaggerated claims made in relation to the germicide or disinfectant power of certain of these agents may do immense harm."

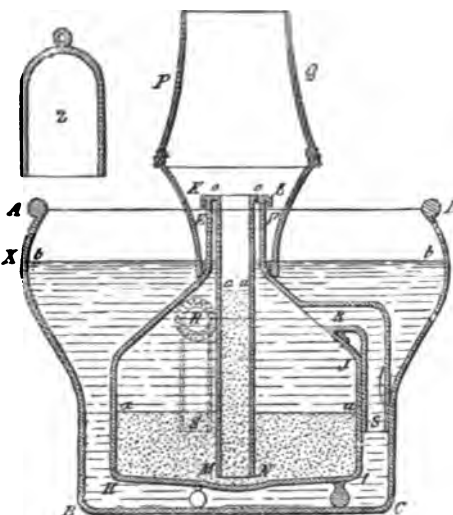
The time-honored Labarraque's solution receives much commendation from the committee. Dr. Duggan, as the result of a special examination of the hypochlorites, finds that a solution containing 0.25 of 1 one per cent (1 part to 400) of chlorine as hypochlorite is an effective germicide, even when allowed to act for only one or two minutes, while 0.06 of 1 per cent (6 parts to 10,000) will kill spores of *B. anthracis* and *B. subtilis* in two hours.

He adds that "the value of the various commercial preparations, such as Labarraque's solution and bleaching-powder (chloride of lime), of course, depends on the amount of available chlorine they contain, since the chlorides and chlorates are of very little value as disinfectants. Bleaching-powder usually contains from 25 to 40 per cent of available chlorine. For most purposes a solution containing 1 part of this preparation to 100 of water is strong enough, for this will contain from 0.25 to 0.40 of 1 per cent of chlorine as hypochlorite. As is stated above, the smaller of these quantities is sufficient to destroy spores almost instantly. There are very few purposes to which disinfectants are applied that are not fulfilled by this solution of 1 to 100 of bleaching-powder. It is not poisonous, does not injure clothing, bedding, etc., and is almost without cost, since bleaching-powder is worth only about five cents per pound. The sodium salt furnishes in some respects a more ele-

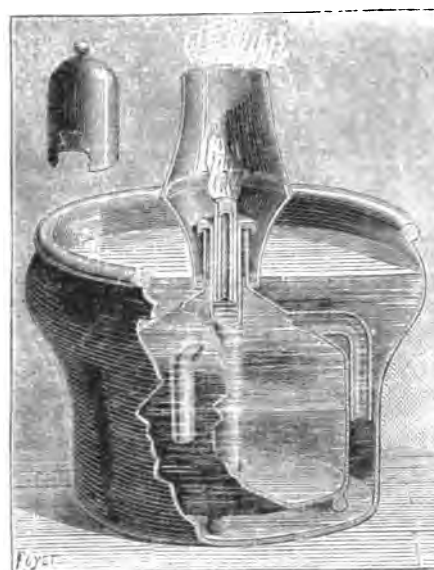
gant preparation, since it leaves on evaporation sodium chloride instead of the hygroscopic calcium chloride. If prepared according to the United States Pharmacopœia, it does not keep very well, but when made by passing chloride gas into a solution of an excess of caustic soda, it shows very little tendency to decompose.

DISULPHIDE OF CARBON BURNER FOR DISINFECTION.

In the near future there is likely to be a demand for efficient modes of disinfection, and in continuation of what we have already said on this subject (See NEW REMEDIES, 1879, 347; 1882, 305, and AMERICAN DRUGGIST, 1884, 64, 217, 238, we reproduce here descriptions of some forms of apparatus lately described in *La Nature*. The burner invented by Mr. Ckiani-Bey avoids any danger arising from the volatile character of carbon disulphide, when it is



used as a source of sulphurous acid, for which purpose it is well adapted. The external container, A, B, C, D,



Ckiani's disulphide of carbon burner.

is formed of tinned-copper. An inner vessel, I, H, E, F, has connected with its walls three siphons, R, S. A cylindrical tube K, L, M, N, is placed within the inner vessel, and disulphide of carbon is poured into it until it reaches the point *aa*. Water is now poured into the outer vessel until it reaches to the line *bb*. Through the siphons the water enters the inner vessel and forces the heavier disulphide of carbon up in the cylinder to the point *a' a'*, when it is absorbed by a wick of cotton which is then lighted. The upper extremity of the tube is surmounted by a chimney, P, Q, which serves to increase the draft. By pouring enough water into the outer receptacle to raise the surface above *bb*, or by using less water in the outer receptacle, the pressure on the disul-

phide in the lamp can be increased or diminished and the rapidity of its combustion varied, as may be desired. The lamp having been placed in the room to be disinfected, and the wick lighted, the room is vacated, all openings tightly closed, and the apparatus is left to take care of itself. When all of the disulphide has been burned, it is replaced by the water, and the flame is extinguished.

When disulphide of carbon is thus used, two and a half kilogrammes of the substance costing (in France) 1.25 francs, will disinfect 100 cubic metres of space. The apparatus itself now cost 50 francs, and is practically indestructible by proper use.

Not only may the apparatus serve for disinfection, but it may likewise be employed for the bleaching of fabrics, sponges, straw hats, etc., and the method is, in many respects, superior to that which consists in the combustion of sulphur.

Lakmoid, a Substitute for Litmus.

By heating resorcin with a small quantity of sodium nitrate and water to a temperature not exceeding 150° C., M. C. Traub and C. Hock have obtained a deep blue substance, soluble in water, and which showed such a remarkable resemblance to litmus in all the reactions tried with it, that the authors have given it the temporary name of "lakmoid" (from "lakmus," the German word for litmus).

Lakmoid is best prepared by gradually heating together in a glass flask, over an oil bath, 10 parts of resorcin, 1 part sodium nitrate, and 1 part water up to 120° C., which temperature is maintained until ammonia ceases to be evolved and the contents of the flask have become blue. The fused mass is then dissolved in 10 parts of distilled water, and treated with an excess of hydrochloric or acetic acid. The precipitate which ensues is collected on a filter, washed with distilled water, and when dry, dissolved in 100 parts of absolute ethyl or amyl alcohol. This solution is filtered, and the filtrate dried in an atmosphere free from ammonia, for which purpose a desiccator containing sulphuric acid is the most suitable. Thus prepared, lakmoid exhibits lustrous, reddish-brown laminae, readily soluble in alcohol, glacial acetic acid and phenol, but sparingly soluble in ether and pure water. The best solvent for lakmoid as an indicator consists of a mixture of equal parts of water and alcohol of 96 per cent, 5 parts of lakmoid and 100 parts of the solvent being the most suitable proportion. The solution, which is of a fine red color, immediately turns blue on the addition of a trace of any alkali.

In its behavior towards reducing agents, and when examined by the spectroscope, lakmoid likewise shows a great resemblance to litmus, and the authors are inclined to believe that it is identical with that substance. They are engaged in further researches on the subject.—*Ber. Deutsch. Chem. Ges.; Chem. & Drugg.*

D. coction of Valerian is recommended as a sedative application for contused wounds by Dr. Martel, of San Malo. He uses 40 grams of valerian root to a litre of water, boiled for half an hour, strained, and *ten per cent of carbolic acid added to it*. [The latter is well known to possess the property of relieving pain when applied locally; and it may be an important element in this connection.—Ed. AM. DRUG.]

Antipyrin, which now sells in New York at from 20 to 30 cents per drachm, is said, by Dujardin-Beaumetz, to be sometimes found adulterated, in France, with quinine and sugar. [This statement does not apply to the article as sold in original packages by the authorized agents.—Ed. A. D.]

Chloroform Water.

IN a recent editorial article in the *Boston Medical and Surgical Journal*, a writer refers to some recent uses of this old remedy (first formularized by Guillot, in 1844), and says that it is not only a handy excipient for many medicines, but possesses valuable analgesic properties. It is a stable preparation, and the savor is especially agreeable, sweetish, and, when diluted one-half, devoid of all piquancy and acidity; it makes a good combination with nearly all medicines which it is desirable to administer in a liquid menstruum, disguising the insipid or unpleasant taste of many of them; it markedly enhances the sedative and anodyne properties of analgesic and narcotic remedies. Lasègur especially commends chloroform water as a suitable vehicle for the administration of morphine, in union with which forms one of the best palliative cough medicines, as is generally acknowledged, in advanced phthisis. Probably no better excipient for the salts of iron can be found. The mode of preparation is very simple: Into a flask two-thirds full of pure water pour an excess of chloroform, agitate the mixture well several times for the space of an hour, and allow the chloroform to deposit itself on the bottom of the flask. Decant or siphon off the clear, supernatant liquid. The solution should be perfectly transparent, containing a little less than one per cent of chloroform. For internal administration it is generally desirable to dilute this saturated solution with an equal quantity of water; the dose of the dilute *Aqua chloroformi* being about a dessertspoonful.

Among the therapeutic advantages of chloroform water is one on which Lasègur and Beurmann much insist, viz., its use as an analgesic in painful stomach affections, whether these proceed from indigestion or organic disease. In the pains of indigestion it is almost without a rival, speedily mitigating the functional distress by its marvellous topical sedative action. In the painful intestinal disorder often accompanying the completion of digestion, it is of no utility. Beurmann has had favorable experience with its employment in allaying the acute suffering and nausea which attend dilatation of the stomach, especially during the digestion of food. He also strongly recommends it in cases of neuralgia. Lasègur also finds advantage in the use of it in the pains and nausea of cancer of the stomach. Beurmann gives a number of formulas, among which are the following:

Parts.	
Saturated Chloroform Water	13
Peppermint Water	3
Water	12

M. Dose a tablespoonful. Good in nervous vomiting and vomiting of pregnancy.

Parts.	
Hydrate of Chloral	1
Syrup of Orange-peel	25
Saturated Chloroform Water	50

M. Dose a tablespoonful. The acrid taste of the chloral is much modified when thus administered.

Parts.	
Saturated Chloroform Water,	
Peppermint Water, aa	50
Syrup of Poppies	1
Bromide of Potassium	1

M. Teaspoonful doses when administered to infants.

Parts.	
Salicylate of Sodium	8
Syrup	30
Peppermint Water	20
Dilute Chloroform Water	100

M. The disagreeable taste of the salicylate is almost completely disguised in this mixture.

Lasègur recommends as a hydrogogue cathartic

Parts.

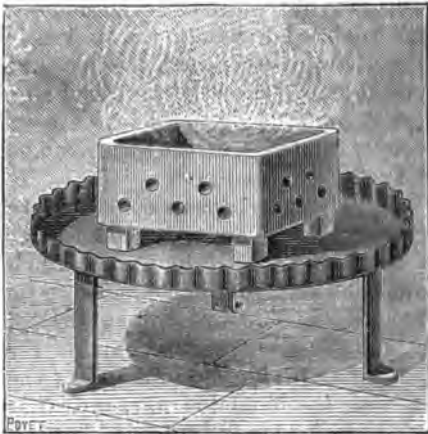
Gamboge..... 1
Syrup of Orange..... 50
Saturated Chloroform Water 100

Of which a tablespoonful may be taken every morning or on alternate mornings.

Phenol-Camphor.

DR. THEODORE SCHAEFER, of Beecher, Ill., says that he first noticed, in Dec., 1882, the fact that, when crystallized carbolic acid is liquefied by means of heat, and camphor is gradually added, a permanent liquid is obtained which is colorless, refractive, possesses the odor of camphor without a trace of that characteristic of carbolic acid, and has a sweetish, camphoraceous, but biting taste, not so caustic as that of carbolic acid, but somewhat benumbing to the tongue. It is soluble in alcohol, ether, chloroform, and ethereal oils, but is insoluble in water, and is heavier than the latter. It burns with a smoky flame, and possesses the advantage over carbolic acid of being less irritating and caustic, and of having a pleasant odor.

Dr. Schaefer has used it successfully for lessening the pain of toothache and ingrowing toe nails, and as a local application in certain parasitic skin affections.—*Boston Med. and Surg. Jour.*



Pasteur's Sulphur-burner.

APPARATUS FOR BURNING SULPHUR.

MR. PASTEUR has suggested for purposes of disinfection a very simple and effective apparatus for the combustion of sulphur, which is described in *La Nature* and consists of a rectangular vessel of fire-clay twenty centimetres wide and twenty-five centimetres long, the sides of which are perforated, in the manner shown in the illustration. This rests upon an iron pan with feet, which support it at a safe distance from the floor, and for further security a layer of sand may be interposed between the furnace and the pan. In order to obtain complete combustion of the flowers of sulphur, care should be used to secure equal combustion over the entire surface. This may be accomplished by first moistening its surface with alcohol, which when lighted will ignite the sulphur.

Trypsin as a Solvent of the Diphtheritic Membrane.

DR. B. M. VAN SYCKEL, New York, recommends a trial of trypsin as a topical application in diphtheria. Trypsin is one of the ferments of the pancreatic fluid. It will dissolve its own weight of fibrin in from five to ten minutes at a temperature of 37° Celsius (98.5° F.). It has been successfully employed as a solvent of the false membrane in diphtheria by Drs. J. Lewis Smith, of New York, and J. A. Keating, of Philadelphia, and at present several gentlemen are engaged

in clinical experiments to determine its value for this purpose. The solution is to be applied by means of the spray, applications being made every fifteen minutes if possible, or as often as the strength of the patient will permit, only a small amount of the liquid being used at each spraying. The following extemporaneous preparation has been found very serviceable in the writer's hand: 50 C.c. (1½ fluid oz.) of a 1 to 1,000 solution of salicylic acid may be added to 5 Gm. (77 grains) of "extractum pancreatis," and the mixture allowed to digest in a water-bath at a temperature of 37° Celsius (98.5° F.) for four hours, then filtered and made slightly alkaline by the addition of bicarbonate of soda. The solution should be made only as required, as it will not keep more than one or two weeks.—*Medical Record.*

Toothache Remedies.

DR. J. R. IRWIN writes to the *North Carolina Med. Journal* that one of the best and most pleasant things that can be used to relieve this painful state of the dental nerves is chewing cinnamon bark. It destroys the sensibility of the nerves and suspends the pain immediately, if the bark is of good quality. "After repeated trials, and in different cases, I am convinced that it is generally as efficacious as any of the other remedies suggested for odontalgia, and not attended with the unpleasant consequences of creasote, carbolic acid, etc., which relieve the pain, but leave the mouth as sore and painful as the tooth was previously, though these results are usually due to carelessness in using."

[For several years the editor of the *AM. DRUGGIST* has been aware of the value of a toothache remedy still more easily obtained and equally efficacious in many cases, viz., a teaspoonful of bicarbonate of sodium in half a glassful of water, to be used at short intervals as a mouth wash. This is equally serviceable in relieving the sensitiveness of the teeth and gums of those who are obliged to undergo dental operations.]

Saccharated Oxide of Iron.

DR. G. L. WALTON, in exhibiting before the Suffolk District (Boston) Medical Society a specimen of this compound, which is chiefly used in Germany, remarked that it is a brownish-red powder, of a very agreeable, sweet taste, completely soluble in five parts of water, and containing three parts of metallic iron. It does not discolor the teeth, and, on account of its ready solubility, may be taken for an indefinite time without affecting digestion, even in cases in which iron is otherwise ill borne. Five to twenty grains may be taken daily in water, powder, or in tablets. Certain precautions needed in its preparation had been pointed out by Herr Blaser, a Leipzig pharmacist, and may be found in the *Boston Med. and Surg. Jour.* for January 12th, 1882. It is in many ways, and especially as regards appearance and solubility in water, much superior to the saccharated carbonate of iron.—*Boston Med. and Surg. Jour.*

Chemical Adulteration of Food.—

Dr. Cyrus Edson, of New York, lately spoke at a meeting of public analysts of the decomposition of gelatin used to adulterate currant jelly, and of the use of chemicals in the curing of meats and the preparation of head-cheese and sausage. In the latter, borax, boric acid, nitrate of potassium and phosphate of potassium are employed to such an extent to prevent decomposition, that there is often a full medicinal dose in each meal made on them.

THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 4. WHOLE No. 130

FRED'K A. CASTLE, M.D., - EDITOR.
CHAS. RICE, PH.D., ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

APRIL, 1885.

SUBSCRIPTION PRICE per year, \$1.00
SINGLE COPIES, 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & CO., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

THE series of papers on drug-store architecture and arrangement, which has appeared in this journal for several months, seems to have interested a large number of our readers, if we may judge from the communications which have been addressed us on the subject. It is already evident that a very general desire has been felt to do something in the way of window decoration and interior arrangement which shall differ from conventional methods and give a store something of an individual character.

Letters, such as have already been received, containing criticisms of the designs published, comments of a practical nature, or giving the results of attempts to utilize our suggestions, will be very acceptable.

ALREADY some of our readers, who have taken hints from the papers by Messrs. Bendiner and Remington, have had the satisfaction of experiencing an

awakened interest on the part of the public as to what is going on in their places of business, and they have a feeling that, after all, there may be a way of salvation not provided for in the "Campion Plan."

ONE correspondent sends us a clipping from his local paper, in which the reporter concludes his description of "the new departure from the stereotyped style of soap and soothing-syrup decoration in the drug-store windows" with the stanza:

"This wise you know more
Than you did before,
Without bothering the clerk
Or buying the store,
Or turning the knob
On the big front door."

The letter which accompanies this extract was received too late to appear in this number, but it will be inferred from its contents that the front door has not had so quiet a time as the poetical license of the reporter would imply.

In preparing this series of papers, we have been fortunate in receiving the assistance of writers and draughtsmen well qualified to handle the subject in an artistic manner, and at the same time able to utilize the practical suggestions offered by those who are especially familiar with the requirements of a retail pharmacy.

It is hardly to be expected that we can be able to suggest schemes for decoration and arrangement which will suit all establishments. So much depends upon the size and location of the store; arrangements for lighting; special requirements of the business, the available cost, etc., that special designs may be needed in each case. We have intended to offer suggestions which might be generally applicable and which should be considered in the choice of any plan.

In succeeding papers we shall describe some of the stores which may serve as notable examples of ingenious arrangement or beautiful design, and for the illustrations which will accompany them we are greatly indebted to the architects who have placed their working plans at our disposal, and supplied us with original drawings made expressly for our use.

THE article on this subject contained in this number is rendered especially attractive by the beauty of the large illustration on the first page, made for us by Mr. Arnold W. Brunner, Architect, of 29 Union Square, in this City, who has devoted considerable attention to the subject of store-architecture.

THE following markings obtained by the gentlemen who graduated highest at the commencement of the New York College of Pharmacy shows a very creditable degree of proficiency; the highest possible total being 483.

Albert H. Hamilton, 473 (Gold

Medal); Albert M. Roy, 470 (Silver Medal); Dudley T. Laremore, 464 (Bronze Medal); George E. Schweinfurth, 460; Daniel Desbecker, 459; George Oberdoerfer, 456; Alexis V. Moschcowitz, 446; Bryan E. Miot, 445; Samuel Brothers, 439; Herman Herzfeld, 439; Thomas P. Murphy, 439; Maurice Schlesinger, 439; Otto Maier, 436.

Mr. Hamilton also won the pharmaceutical balance (Bedford Prize) as the prize in pharmacy (199 out of a possible 205), and Mr. Roy the Botany prize of a microscope (146 in a possible 156).

THE removal of the sections relating to Adulterations and the sale of poisons from the Michigan Pharmacy Bill has been done, it is said, to enable the bill to be passed. This is a somewhat remarkable statement in view of the fact that in other States, where pharmacy laws have been enacted, these clauses are the ones which have been used to make the measure popular. The promoters of these bills have argued that only those who are well educated in pharmacy should be allowed to sell poisons, and that only those who are educated to the business are to be trusted in the sale of articles which are very liable to adulteration, since their superior skill will insure to the public the purity of their wares. On these grounds Legislatures have been asked to pass laws in the interests of the public to regulate the practice of pharmacy.

Aniline Marking-Ink.—Dr. E. Jacobsen gives the following formula for a preparation which, according to him, comes into trade under the name of *Jetoline*:—Solution 1: Crystallized copper chloride, 8.52; sodium chloride, 10.65; ammonium chloride, 5.35; water, 60. Solution 2: Aniline hydrochlorate, 20; distilled water, 30; gum solution (1 in 2), 20; and glycerin, 10. Four parts of No. 2, with 1 part of No. 1, yield a greenish fluid, which can be used at once to mark linen, but the compound will not keep more than a few days.

Iodoform Gauze, preferable to Billroth's or Bruns' is made by Dr. Heidenreich by soaking ordinary gauze in a solution of 6 parts of colophony and 2 parts of castor oil, in 100 parts of 94 per cent spirit, and subsequently impregnating it with 20 to 100 per cent of iodoform. This gauze is soft, non-adhesive, and of constant composition.

Chloride of Lime was formerly used in gonorrhœa, but quite lately has been very warmly recommended as an injection in old cases of gleet after all the inflammatory symptoms, especially the pain, have subsided. The amount of secretion which may be present is a matter of no importance. Nothnagel says his experience with it has been favorable, in solutions of five to ten per cent.

Oleoze.—The German preparation called oleoze, so great a favorite in disguising unpleasant remedies and making most compounds pleasant to smell and taste, has the following composition: One part each of the oils of lavender, cloves, cinnamon, thyme, citron, mace and orange flowers, three parts balsam of Peru, and two hundred and forty parts of spirits.

Synthesis of the Alkaloids.*

THE vegetable bases (alkaloids) at present occupy a prominent place in chemical research. Investigations on alkaloids and allied substances are being conducted in most scientific laboratories, and new discoveries, throwing more and more light upon the subject, are brought forward in short intervals.

Alkaloids, of which scarcely more than their chemical formula was known a few years ago, are constantly drawn within the circle of those whose chemical constitution becomes better understood; and from the moment when the latter is recognized beyond a doubt, a way will be found for their artificial preparation. Both among professionals and among lay persons the impression appears to prevail that this manufacture of alkaloids on a large scale, from purely chemical (not botanical) sources, may be expected daily to become an accomplished fact. How deep-seated this opinion is, may best be recognized from the fact—an open secret, indeed—that no sooner has the synthesis of an important alkaloid been accomplished, the large factories of artificial organic colors at once proceed to carry it out on a commercial scale, for which they are equipped with unsurpassed means, able brains and hands, and rich experience. It will, therefore, be of advantage to examine whether the hopes and expectations before alluded to are justified, and what influence the researches at present being conducted may have upon the realization of these hopes.

There is scarcely any doubt that each chemical substance existing in the vegetable kingdom may be prepared artificially. For those who are not in the habit of following the theoretical speculations of the new school of chemistry, the history of artificial alizarin, indigo blue, vanillin, cumarin, etc., will render the above statement acceptable. Yet the artificial preparations of these substances, except in accidental cases, cannot be thought of or undertaken until the investigation of their constitution is completed, just like a house, of which no plans are in existence, can only then be exactly reproduced when it has been most minutely measured and sketched in all its details. And as it is easier to accomplish this in the case of a dwelling house of simple construction than in the case of a monumental building, with a labyrinth of rooms and intricate construction, in the same manner the recognition of the constitution of an organic body becomes so much the more difficult the more complicated it is, or, in other words, the more possibilities there are for the arrangement of the atom-groups or radicals in the molecule; or, to use a chemical expression, the more isomers of it there may be theoretically possible. Undoubtedly, the constitution of most alkaloids is much more complicated than that of vanillin or alizarin, and this is the principal reason why the artificial preparation of the latter has preceded that of the former.

Already in the beginning of this century Sertürner made the important discovery that the effects of opium depended mainly upon a crystallizable constituent (morphine), which was remarkable from the fact that it in many respects resembled the caustic alkalies, and therefore appeared to be a "vegetable alkali." This observation led to the discovery of alkaloids

in many other plants of medicinal importance or toxic properties, and shortly afterward to the manufacture of the same on a large scale from their native sources. It will be unnecessary here to dilate upon the importance of this discovery for medicine and for pharmacy.

Numerous chemists subsequently occupied themselves with the task of working out the chemical constitution of the alkaloids; and this investigation acquired still more interest when the classic researches of Wurtz and Hofmann showed that similar organic bases could be prepared artificially. Hofmann's discovery particularly led to the recognition of the relationship between the alkaloids and ammonia, inasmuch as the former could be regarded as primary, secondary, and tertiary amines.

During the more recent period, in which were laid the foundations of modern chemistry, the alkaloids received but little attention, for very obvious reasons. In the first place, while searching for facts illustrative or confirmatory of modern chemical theories, the study of such complicated substances as the alkaloids proved unsuitable; and afterwards, when the foundation for their more rational study had been laid, other fields offered such fruitful channels upon which new discoveries could be made almost without an effort—particularly the so-called aromatic substances, and the artificial coloring matters which are even now by no means exhausted—that but few workers remained for the study of the alkaloids, and the most important ones were altogether neglected.

Since it has been ascertained that all true alkaloids contain nitrogen, it becomes a cardinal question what rôle the nitrogen plays in them, and what nitrogenized group or radicals occur in them. Yet, on this very point, scarcely anything has been learned up to the most recent time.

It is certain that the great difficulties occurring in the investigation of alkaloids will be surmounted, but much labor will yet be necessary, and many a year will elapse before a sufficient insight will have been gained in the subject.

And even after the scientific synthesis of alkaloids has been accomplished, their technical manufacture still remains problematical, for the following reasons:

It is not impossible, and in many cases quite probable, that the crude materials requisite for the artificial manufacture will be so difficult to obtain, or so laborious to transform, that the manufacture would be profitless, so much the more since every effort will be made to destroy this competition by an increased cultivation of the natural source, the medicinal plants and trees.

Another point is the following: We know by experience that those organic compounds, which deflect polarized light and which are obtained from the plants themselves, are devoid of the property of deflecting polarized light when they are prepared artificially. The cause of this would seem to be this, that during the synthesis or artificial preparation there are produced two optically-opposed, but otherwise isomeric, substances; the optical power of one is neutralized by that of the other. In many cases, as for instance, in that of artificial tartaric acid, the separation of the optically active portion has been successfully accomplished, but yet it has been, and is still, very troublesome.

Now the vegetable alkaloids are likewise optically active substances, and when they are once prepared artificially it would be a wonder indeed if there would not be obtained optically inactive mixtures of alkaloids of opposite optic power, the separation of

which would be difficult, but probably unavoidable.

The chapter, however, which is here opened has more gaps than contents, since we possess scarcely more than hints regarding the remarkable relations between optic activity, chemical constitution, and physiological effects. Hence it may be for the present, with equal justice, asserted or denied, that the inactive artificial alkaloid will be found to have the same therapeutic effects as the active one prepared from the plant.

Judging from what has been said so far, we may conclude that many more experimental investigations than can even now be guessed at, will be necessary in the future, and that the scientific solution of the problem does not necessarily imply the realization of the same in practice.

Nevertheless, it may be asserted with confidence that the experimental investigations thus conducted will redound to the general benefit of chemistry at large.

The results so far obtained with natural alkaloids have caused the preparation of certain new artificial remedies.

When it had been ascertained that quinine was a derivative of the so-called *para-oxy-chinoline*, various other chinoline (or quinoline) derivatives were tested physiologically, and in a few of them, such as kairine, anti-pyrrin, and recently thallin, strong antipyretic properties were discovered. The synthesis of atropine from its decomposition products made it possible to prepare other atropines artificially, so that our medical armamentarium has already to some extent been enriched in this manner.

Many alkaloidal substances will no doubt be discovered and prepared in the years to come. Just in proportion as their constitution will be more and more known, it will be imitated with more or less variations, and many of them, perhaps the most, will have only a chemical interest. But there will undoubtedly be some which will be found medicinally active, and finally some will be obtained which even excel the natural alkaloid in many respects.

It is quite possible that, in place of each one of the more important alkaloids, we shall obtain several artificial bodies which are possessed of specific properties in certain diseases, and even if the synthesis of quinine and morphine should not be accomplished, and only one of the results above foreshadowed be obtained, an immense boon would be contributed upon mankind.—*Pharm. Post.*

To Secure a Dead Black Surface on Brass Work.

DISSOLVE copper wire in nitric acid, diluted by (say) three or four parts of water to one of acid. The article to be blackened is heated pretty hot and then dipped into the solution. It is then taken out and heated over a Bunsen burner or spirit lamp. When the article is heated to the proper temperature, the green color of the copper first appears, and as the heat is increased the article becomes a fine dead black. It is not necessary to lacquer it; it is better not to do so, only giving it a good brushing to remove the dust, and it may be considered finished. If, however, it is given a single coat of lacquer the color becomes blacker, but there should not be sufficient put on to make the surface glisten.

To find the number of bricks in a wall, first find the number of square feet of surface, and then multiply by 7 for a 4-inch wall, by 14 for an 8-inch wall, by 21 for a 12-inch wall, and by 28 for a 16-inch wall.

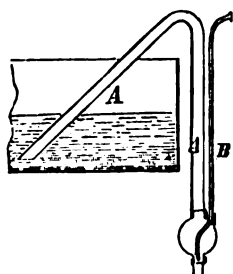
* Original translation and abstract from the original, by Prof. Dr. Zd. H. Skroup, of Vienna. The author is well known as one of the most successful investigators upon the field of organic chemistry, and more especially upon that which seeks to elucidate the constitution of the alkaloids (quinine, cinchonine, etc.), and to pave the way for their future artificial manufacture.—*Ed. AMER. DRUGGIST.*

ROTARY CAPSULE HOLDER.

In some manufacturing establishments a large number of volumetric assays have to be made each day, and special arrangements or devices are usually resorted to in such cases for the purpose of saving time. One of these, which is particularly useful where only a few standard test liquids are to be used, but the number of samples is large, is shown in the illustration. The central frame which carries the three reagent bottles is stationary, but the table upon which the capsules are placed is rotary (see Fig. 2), with holes near the periphery for the capsules to sit in. This apparatus was specially designed for beet juice assay, and it therefore has several additional attachments, as for instance the arms *cc* for carrying funnels, and the waste-funnels *uuu*, which are not generally necessary. But the principle is a good one and may be utilized to advantage.

A NEW FORM OF SIPHON.

A VERY convenient form of siphon, at least so far as the principle of starting it is concerned, is illustrated here. Into a globe of metal, or, better, of glass, a small tube is introduced through a lateral opening, and the lower end of this tube, drawn out to a point, is made to enter a short distance into the outlet from the globe. The latter is connected with a common siphon of suitable dimensions. By blowing into the small tube, and the rush of air passing down the outlet pipe, the air in the legs of the siphon



Siphon.

becomes sufficiently rarefied to cause the liquid to flow over. This siphon is the invention of Jaime Puig y Moré of Barcelona, and has been patented in Germany.

Testing Cod-Liver Oil.*

AN apothecary in an Austrian city had charged his competitor with selling a bad quality of cod-liver oil, inasmuch as the latter had a straw-yellow color, while the official oil is directed to be golden-yellow, according to the Austrian Pharmacopoeia. Both oils were sent to me for report and I found that the sample of oil from the defendant was the first quality of "steam cod-liver oil," while the sample of the complainant turned out to be second quality. The fact that the complainant did not reflect that the Austrian Pharmacopoeia appeared over ten years ago when the straw-yellow steam oil did not yet exist, again shows how necessary it is that the apothecary should keep abreast of the progress of the times, both scientifically and practically, if he intends to preserve the honor of his profession.

For the purpose of the examination, I had procured cod-liver oil from various sources, so as to enable me to make comparative reactions. Accordingly I found that good cod-liver oil is either wholly devoid of free fatty acids, or contains at most only a faint trace thereof. In the second quality of oil, the quantity of free acid does not exceed one-half per cent; but the more free fatty acid is present, the

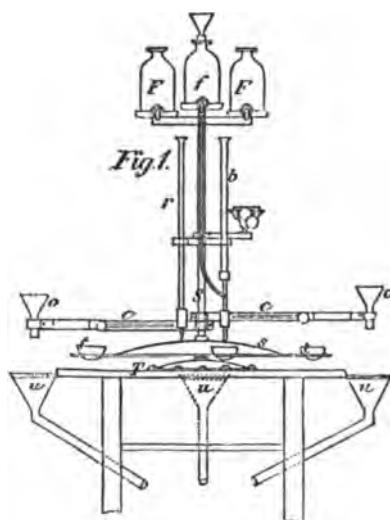
more it depreciates the value of the oils.

It follows from this, that Jacobsen's test with rosaniline is merely an identity reaction for inferior qualities, that is, the more rosaniline a certain cod-liver oil is able to dissolve the more free fatty acid does it contain; for if not more than one-third per cent of free acid, or none at all is present, the oil does not dissolve a trace of rosaniline. At one time this reaction was put forward as a test for good cod-liver oil, but at the present day, when good cod-liver oil has ceased to contain more than a trace of free acid, any oil should be rejected which dissolves rosaniline.

Since an oil containing soap likewise dissolves rosaniline, this reaction might be regarded as an indication that a sample of acid-free oil has been subjected to an artificial neutralization.

The following tests were performed with 8 samples of cod-liver oil obtained from various sources:

1. Two to 3 C.c. of the oil are mixed with 4 or 5 drops of tincture of litmus, and the mixture is thoroughly shaken. Steam cod-liver oil of first quality does not alter the blue tint in less than one hour. Second quality or yellow cod-liver oil of best quality becomes red within ten minutes, while



Rotary Capsule Holder.

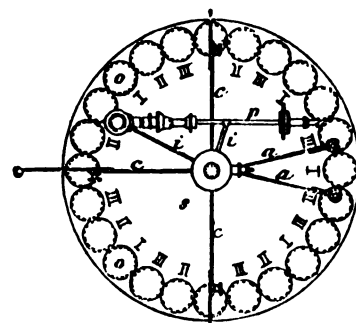
inferior sorts at once change the blue tints to red. According to the quantity of acid present, the taste is more or less mild or biting: cod-liver oil free from acid has an exceedingly mild taste. The old statement that good cod-liver oil should have an acid reaction is no longer valid, since the best quality of steam oil has proved to be absolutely free from fatty acids.

2. The reaction with concentrated sulphuric acid is indispensable to prove identity, although there are some adulterants (mineral oils, some rape oils), which are not affected by it. The test is performed as follows: about 2 C.c. of chloroform and 8 to 10 drops of the cod-liver oil are put into a test-tube, and 2 drops of concentrated sulphuric acid then added. On agitation, the mixture acquires a light violet-blue color, becoming darker in a few seconds, then of the color of permanganate, finally brownish-red to brownish-black. The German Pharm. (also the U. S. Pharm.) directs disulphide of carbon to be used in this test, instead of chloroform.

3. Into a test-tube of the diameter of a finger, 1 volume (2 C.c.) of concentrated sulphuric acid, and 2 volumes (4 C.c.) of the oil are poured, and the mixture agitated. After standing three to four hours, and becoming cold, the darker mixture appears as a rather stiff salve-like mass. If foreign oils are present, the mass does not have the consistence of a salve, but is thick-fluid, or about of the consistence of vaseline.

4. The elaidin test, with nitric acid of spec. grav. 1.185 and a few turnings of copper furnishes equal results with all genuine cod-liver oils. Neither are there any special color tints produced during the reaction, nor is anything separated after two to three days, even at a temperature of 7 to 10° C. The elaidin or oil layer is yellow with brownish-red tint, clear or but little opaque, and but little thicker than the oil itself. Any separate particles in the oil-layer indicate the presence of foreign fats.

5. To saponify the oil, about 15 C.c. of caustic soda solution, spec. grav. 1.160, are put into a glass flask, together with 7.5 Gm. of cod-liver oil, and 5 C.c. of water. The whole is mixed and brought four or five times to the boiling point under continual agitation. The flask should not be more than one-third full, as the mass foams considerably on boiling. It is now poured into a wide test-tube, and the latter put for a few hours first in a warm, afterwards in a cold place. The completely cooled mass, which is not completely saponified, forms two layers. The upper, soapy layer appears to be quite firm, when completely cold. But if the white, firm coat on the surface is removed, the main portion of the soapy layer below it is found to be translucent and almost colorless and liquid as oil. If foreign oils, resin, etc., are present, the soapy layer is not translucent and not liquid.



Rotary Capsule Holder.

FIG. 2.

6. An adulteration with vaseline-oil is somewhat difficult to prove chemically with dispatch. The spec. grav. would here be probably the best indicator, and for the expert, also, the "cork-friction test." The latter consists in this, that a cork covered with cod-liver oil if turned in the neck of the cod-liver oil bottle with gentle pressure, appears to meet with no resistance, nor produces a screeching sound if the oil was pure, while both of these phenomena would be encountered if a mineral oil was present. [We would certainly hesitate to rely upon this test. Our main reliance would be saponification of the oil with solution of potassa, and further examination of the oily matter not forming a soap.]

The spec. grav. of cod-liver oil varies between 0.920 and 0.930, being mostly between 0.922 and 0.925. If the spec. grav. is below 0.920 it is possible the oil is mixed with liquid paraffin, and would have to be specially tested for mineral oils, even though the "cork friction test" should be unaccompanied by any sound.

7. Boudard's nitric acid reaction is said to permit the recognition of other fish oils. I found it, however, to fail when only 10 or 15 per cent of the latter were present. It is as follows: About 2 C.c. of the cod-liver oil are mixed with 15 to 20 drops of nitric acid of spec. grav. 1.450-1.500; if the oil was pure, a fine carmin tint gradually makes its appearance. The same reaction occurs when concentrated nitric acid is added to a mixture of 1 part of the oil with 3 to 4 parts of

* Original translation from the original by H. Hager, in *Pharm. Centralt.*

chloroform. The red color may have a yellowish tint, but should not turn reddish brown or brown.

Fuming nitric acid should not be used in this test, since this acts upon the acid so energetically that it brings it to a boil and projects it from the test-tube.

8. An adulteration with resin [or resin oil] would increase the specific gravity, and upon saponification the soapy layer would not be translucent but opaque. By boiling and agitating the oil with a mixture of equal volumes of dilute [68 per cent by volume] and absolute alcohol [or, in other words, with alcohol of about 84 per cent by volume], the resin [or resin oil] could be separated from the cod-liver oil, and would be left behind on evaporation of the alcoholic solution. The sulphuric acid test would likewise furnish results different from those mentioned under § 2.

9. If cod-liver oil is attempted to be deprived of free acid by oxide of lead, it will retain some of this metal, which could be recognized by boiling and agitating the oil with dilute acetic acid, filtering the acidulous, aqueous layer through a wetted filter, neutralizing or supersaturating with ammonia, and passing hydrosulphuric acid through it, when black sulphide of lead would be separated. Cod-liver oil containing lead, when shaken with dilute sulphuric acid and then put in a warm place, does not produce, on standing, two equally clear layers, but both the aqueous and the oily layer will contain turbid particles. The formation of these layers requires a standing at rest for 24 to 48 hours and a temperature of about 25° C.

These tests will probably suffice to recognize all possible adulterations. Of the reactions formerly proposed, that of Jacobsen may be dispensed with, as it is only useful when it is desired to ascertain whether cod-liver oil contains too much free acid. The statement has also been made that cod-liver oil heated with caustic alkalis should not exhale an odor resembling valerian, which would be characteristic of ray-liver oil. Yet, even the best genuine cod-liver oil, when thus treated, yields an odor faintly recalling that of valerian. . . . Regarding the preservation of cod-liver oil, it is advisable to employ Appert's method. Suitable pint or quart bottles are filled with the oil to within 3 C.c. of the orifice, then heated in a water bath to 60° or 70° C., and while still hot, closed with good and dry taper corks in such a way that the cork displaces a portion of the oil and no air bubble remains in the bottle. When the contents have cooled to 20°-30° C., the corks are firmly driven in and cut off, and after the neck and end of the cork is thoroughly cleaned, suitably capped and labelled. The failure of removing every trace of oil from the outside will often result in the development of a rancid odor when the cap is taken off, and before the bottle is opened.—*Pharm. Centralb.*, Jan. 8th.

IMPERMEABLE MASKS.

For some time past, Galante & Sons, of Paris, well-known makers of surgical appliances, have made coverings for different portions of the body of vulcanized india-rubber, which have been recommended by Drs. A. Fournier, Guibout, E. Besnier, and others as serviceable in the treatment of certain forms of eczema.

It is the custom, with many ladies who desire to improve their complexion and to give to the skin of the face a color and transparency which may render them more attractive to their friends, to apply certain cosmetics at bed-time and cover the face with a

mask of kid or chamois, which is worn until morning. We reproduce Messrs. Galante's illustration of their caoutchouc mask with the idea that some manufacturer of india-rubber goods in this country may find it worth his trouble to supply the market with something of this character. As it will be seen in the illustration, the mask should be modelled to fit the face, and should be made in three or four sizes. In choosing a cosmetic, if one is needed, it should be remembered that contact with fatty bodies causes india-rubber to lose its elasticity and become brittle. For this reason the paraffins or a magma of hydrated starch are preferable as bases.

The Estimation of Morphine in Opium.

In a paper read before the Am. Chem. Soc., Mr. J. Howard Wainright, of the U. S. Laboratory attached to the Custom House, gives an account of the method used by him for assaying opium, which is essentially that of Dr.



Impermeable Masks.

Squibb (published in the *Ephemeris*) and which the author has modified in some minor details. He describes it as follows:

I have compared this method with the official one of the Pharmacopœia and also with others, upon a specially prepared sample of opium made up from selected specimens which were dried, powdered and thoroughly mixed. In four different parts of this sample the morphine was determined by Dr. Squibb's method and the average of the results obtained was taken as the percentage of morphine.

The following is a brief description of this method of assay as used in my own practice. It consists of three distinct operations, viz.: The preparation of the extract. 2d. Separating the morphine therefrom; and 3d. The treatment of the separated alkaloid.

1st. A convenient weight of the sample (preferably about 10 grammes) is introduced into an ordinary salt mouth vial of about 4 to 6 ounces capacity, fitted with a good cork. About 100 C.c. of boiling water is added, and the bottle is tightly corked and allowed to stand, after frequent hard shakings, from 12 to 24 hours. The magma is allowed to settle, and the dark extract is decanted upon a filter of convenient size. When most of this extract has run through into a medium-sized beaker, from 30 to 50 C.c. of boiling water is added, the bottle is well agitated, and the contents

are then transferred to the filter with as little hot water as possible. When all the liquid has drained through the filter, it is carefully washed down with a very little hot water, applied drop by drop around the edges, and allowed to drain as much as it will. As soon as the liquid ceases to drop, the beaker is replaced by an evaporating dish of about 100 to 150 C.c. capacity, and the contents of the filter are brought back into the bottle by means of a small spatula, and again shaken up with about 50 C.c. of hot water. They are then thrown upon the same filter, and are washed completely upon the filter from the bottle, this washing being continued until about 100 C.c. have run through into the dish or until the washings come through colorless. The dish is now placed upon a water-bath, and the weak extract evaporated, adding to it from time to time the stronger portion from the beaker until the whole is concentrated to a volume of about 20 to 25 C.c. The concentrated extract is transferred with as little water as possible to a two-ounce Erlenmeyer flask accurately tared, and provided with a tight-fitting cork, and allowed to cool. It is now ready to be submitted to the second part of the process, viz., the separation of the morphine.

2d. After adding 10 C.c. of 95 per cent alcohol, the flask is agitated, and a volume of ether equal to that of the contents is added, the cork is tightly fitted, and the flask well shaken. The cork is now removed, and before the ether has had time to separate, a slight excess (about 4 C.c.) of a 10-per cent solution of ammonia is added. The cork is again replaced, and the flask well shaken until crystals of morphine begin to separate. The flask is now set aside in a cool place, and the separation of the alkaloid allowed to continue for about 12 hours, when it will be complete. This complete separation may also be accomplished in from half an hour to two or three hours by continuous or frequent agitation. The alcohol is added in order to permit of the ether mixing readily with the aqueous extract, and thereby prevent the separation of narcotine, which is readily soluble in this menstruum.

3d. When the separation of morphine is complete, the cork is removed from the flask, and the upper stratum of ethereal fluid carrying most of the narcotine, etc., is carefully decanted through a tared filter of 9 Cm. diameter without disturbing the dark watery liquid in the bottom of the flask. Upon this dark liquid is now poured about 20 C.c. more ether, which is rinsed around the sides of the flask and the surface of the liquid, and is decanted carefully through the filter as before, that remaining being absorbed by means of a strip of blotting paper. The filter is washed down with a little more ether, applied drop by drop around the edges and allowed to dry, so that the heavy liquid, which is now thrown upon it, together with the morphine, will pass through readily. The crystals remaining in the flask are then washed upon the filter with cold water, and the washing continued until the water comes through colorless.

The filter and contents are removed from the funnel, and the edges having been carefully folded together, are pressed between folds of blotting paper until most of the moisture is absorbed. It is then dried in an air bath (together with the tared flask, if any of the crystals remain adhering to its sides) at a temperature of 100 C., and weighed, the result obtained, after subtracting the tare of the filter (and flask, if it has been found necessary to dry and weigh it), will be the weight of morphine in the sample taken. Dr. Squibb directs that 0.1 gramme of these

crystals, finely powdered, should be weighed off and treated in a large test-tube, fitted with a cork, with 10 C.c. of official lime-water; upon occasional shaking, the whole should dissolve, thereby showing the absence of narcotine. He also says that the filters should be tared both before and after weighing the crystals. This I think hardly necessary, as the coloring matter and gumming substances can be washed quite free from the paper and crystals without danger of loss of morphine if the water is quite cold. I have tried this repeatedly, and find that 50 C.c. of water used in washing will not make any great difference in the weight of the morphine. It is also my experience that the use of hot water in making the extract seems to work much better than cold; the final results of the assay, if carefully conducted, being about the same in either case, but the opium can be completely extracted with much less water in the former case, the resulting liquid filters much more readily, and the magma is much easier to wash.—*Journ. Am. Chem. Soc.*, VII., 48.

Determination of Phosphoric Acid.

ANALYSTS have for a long time been discussing the best methods of determining the quantity of phosphoric acid in complex compounds, such as fertilizers, phosphate liquids, etc., and as a result of their discussion, the Association of Official Agricultural Chemists have agreed upon the following uniform scheme, for the session of 1884-85:

1. The sample should be well intermixed and properly prepared, so that separate portions shall accurately represent the substance under examination, without loss or gain of moisture.

2. *Water Soluble Phosphoric Acid.*—Bring 2 Gm. on a filter; add a little water; let it run out before adding more water, and repeat this treatment cautiously until no phosphate is likely to precipitate in the filter. (The washings may show turbidity after passing the filter.) When the substance is nearly washed in this manner, it is transferred to a mortar and rubbed with a rubber-tipped pestle to a homogeneous paste (but not further pulverized), then returned to the filter and washed with water until the washings no longer react acid with delicate test-paper. Mix the washings. Take an aliquot (usually corresponding to one-third or one-half of a gramme of the substance), and determine phosphoric acid as under total phosphoric acid.

3. *Citrate Insoluble Phosphoric Acid.*—Wash the residue of the treatment with water into 150 C.c. flask with 100 C.c. of strictly neutral ammonium citrate solution of 1.09 density; shred and add the filter-paper; cork the flask securely; place in a water-bath with constant temperature of 65° C., and digest for thirty minutes with frequent shaking. Filter the warm solution quickly, and wash with water of ordinary temperature.*

Transfer the filter and its contents to a porcelain capsule. Ignite until the organic matter is destroyed; treat with 10 to 15 C.c. of fuming hydrochloric acid; digest over a low flame until the phosphate is dissolved; dilute to 200 C.c., mix; pass through a dry filter; take an aliquot, and determine phosphoric acid as under total.

4. *Total Phosphoric Acid.*—Weigh 2 Gm. into a capsule, add and mix intimately with 4 to 7 C.c. of a nearly saturated solution of magnesium nitrate, dry, ignite gently; if necessary, moisten the residue with nitric acid and ignite again to destroy all organic matter; add to the residue 15 to 20 C.c. of fuming hydrochloric acid; di-

gest at a gentle heat until all the phosphates are dissolved; dilute to 200 C.c., mix; pass through a dry filter; take 50 C.c. of filtrate; neutralize with ammonia; add about 15 Gm. dry ammonium nitrate, and to the hot solution, for every decigramme of P_2O_5 , that is present, 50 C.c. of molybdic solution. Digest at about 65° C. for an hour; filter and wash with ammonium nitrate solution. (Test the filtrate by removed digestion and addition of more molybdic solution.)

Dissolve the precipitate on the filter with ammonia and hot water, and wash into a beaker to a bulk not more than 100 C.c. Nearly neutralize with hydrochloric acid; cool and add magnesia mixture from a burette, slowly (one drop per second), and stirring vigorously. After fifteen minutes add 30 C.c. of ammonia solution of density of 0.96. Let stand several hours. (Two hours are usually enough.) Filter, wash with dilute ammonia; ignite intensely for ten minutes, and weigh.

5. *Citrate Soluble Phosphoric Acid.*—The sum of the water-soluble and citrate-insoluble subtracted from the total gives the citrate-soluble.

PREPARATION OF REAGENTS.

1. *To prepare Ammonium Citrate Solution.*—Mix 270 Gm. of commercial citric acid with 1,500 C.c. of water; nearly neutralize with crushed commercial carbonate of ammonia 410 Gms., heat to expel the carbonic acid, cool; add ammonia until exactly neutral (testing for excess both of acid and alkali by aid of delicate red and blue litmus papers), and bring to volume of two liters. Dilute further until the density is 1.09 as tested by the balance or accurate specific gravity spindle.

2. *To Prepare Solution of Magnesium Nitrate.*—Dissolve 320 Gm. of "calcined magnesia" in nitric acid, avoiding excess of the latter; then add a little "calcined magnesia" in excess, and boil; filter from the excess of magnesia, ferric oxide, etc., and bring to volume of 2 liters.

3. *To Prepare Molybdic Solution.*—Dissolve 100 Gm. of molybdic acid in 400 Gm. or 417 C.c. of ammonia of sp. gr. 0.96, and pour the solution thus obtained into 1,500 Gm. or 1,250 C.c. of nitric acid of sp. gr. 1.20. Keep the mixture in a warm place for several days, or until a portion heated to 40° C. deposits no yellow precipitate of ammonium phospho-molybdate. Decant the solution from any sediment, and preserve in glass-stopped vessels.

4. *To Prepare Ammonium Solution.*—Dissolve 200 Gm. of commercial ammonium nitrate in water, and bring to a volume of 2 liters.

5. *To Prepare Magnesia Mixture.*—Dissolve 22 Gm. of recently ignited "calcined magnesia" in dilute hydrochloric acid, avoiding excess of the latter. Add a little "calcined magnesia" in excess, and boil a few minutes to precipitate iron, alumina and phosphoric acid; filter, add 280 Gm. of ammonium chloride, 700 C.c. of ammonia of sp. gr. 0.96, and water enough to make the volume of 2 liters. Instead of the solution of 22 Gm. of "calcined magnesia," 110 Gm. of crystallized magnesium chloride ($MgCl_2 \cdot 6H_2O$) may be used.

6. *Dilute Ammonia for Washing.*—One volume ammonia of sp. gr. 0.96, mixed with 3 volumes of water, or usually 1 volume of concentrated ammonia with 6 volumes of water.—*Chem. News.*

Removal of Arsenic from Zinc.

ACCORDING to l' Hôte, metallic zinc may be rapidly freed from arsenic by melting it and adding from 1 to 1½ per cent of anhydrous chloride of magnesium while stirring. Vapor of chloride of zinc will be given off, and all the arsenic will escape as trichlor-

ide. When poured into water, the granulated zinc will be found completely free from arsenic, and will have the additional advantage of being more readily soluble in dilute sulphuric acid than the ordinary metallic zinc.—*Revue Indust.*

A New Test for Iodine.

A NEW and very delicate test for iodine is mentioned in the *National Druggist* as having been recently employed by Dr. Frericks of the Mallinckrodt Chemical Works at St. Louis, and communicated by Prof. Chas. O. Curtman, M.D.

The reagent, which is able to reveal small quantities of iodine in presence of all other members of the chlorine group, is made by precipitating the an aqueous solution of nitrate of silver by chloride of sodium, separating the silver chloride by filtration, washing it thoroughly, and then dissolving it in an excess of water of ammonia.

This ammonio-chloride of silver will produce a yellow-precipitate of silver iodide in liquids containing even a trace of a soluble iodide.

Volumetric Iodine Solution.

IN a review of the volumetric processes described by the last German Pharmacopoeia, Jassoy draws attention to a method which is not quite new, we believe, but comparatively little known or used, of ascertaining the exact strength or titre of the iodine solution. The latter is usually made by starting from a known weight of supposed pure and dry iodine. To obtain the latter, the iodine mixed with some iodide of potassium is usually directed to be resublimed several times, and finally to be dried over sulphuric acid. The weighing of the purified iodine, moreover, must be performed with great care, the iodine being inclosed between two watch glasses, in order to avoid loss by evaporation. All this is very circumstantial. A much more simple and exact method is the following:

Prepare a ½ normal solution of purified bichromate of potassium, containing 4.92 Gm. per liter. This solution when once prepared and kept so that it cannot lose water by evaporation, retains its original strength permanently. The bichromate must first be completely freed from sulphuric acid by repeated crystallization, and finally fused in a porcelain capsule, with avoidance of too high a heat. On cooling, it falls to a fine crystalline powder and is in the most suitable condition for exact weighing.

If it be now desired to ascertain the exact titre of the volumetric solution of hyposulphite of sodium (see U. S. Ph., p. 395), 25 C.c. of the bichromate solution are introduced into a stoppered flask of the capacity of 300 to 400 C.c. (10 to 13 fl. oz.), 100 C.c. (ab. 3 oz.) of water are added, then 5 C.c. of hydrochloric acid, and finally 1.5 to 2 Gm. of pure iodide of potassium. The flask is closed and allowed to stand for a few minutes, when the whole of the iodine of the iodide of potassium added will have been liberated. Next, enough hyposulphite solution is added from a burette until all the iodine is fixed, and the liquid has acquired a faint bluish color from the presence of chloride of chromium, without the least tint of yellow. This point may be reached in daylight, even without the aid of an indicator, to a drop. Supposing 25.4 C.c. of the hyposulphite solution had been used for fixing the iodine liberated by the 25 C.c. of bichromate solution originally employed, then the "factor" for the hyposulphite solution [which only in very rare cases, or by accident, will correspond with the iodide solution cubic centimeter for cubic centimeter, or 1 to 1] will be $\frac{25}{25.4} = 0.984$.

* This filtration should not exceed fifteen to twenty minutes in duration, and in difficult cases is best effected by use of a plaited filter of very porous paper, or by help of a filter-pump of moderate power.

Now if it is also desired to learn the exact titre of the iodine solution, so as to ascertain its "factor," it is only necessary to multiply the number of C.c. of "hypo" solution required for fixing the iodine in a given volume of the iodine solution (see U. S. Ph., p. 396), with the factor previously ascertained for it, and to divide the product by the number of C.c. of the iodine solution used. Supposing, for 20 C.c. of iodine solution of unknown strength, 20.3 C.c. of the above-mentioned "hypo" solution had been consumed, the "factor" of the iodine solution will be $20.3 \times 0.984 = 0.998$.

It will thus be seen that every incorrect volumetric liquid may be rendered available and correct by ascertaining its factor—that is, the fraction which must be used, in place of the figure 1, to measure its equivalence with its corresponding test liquid.—After *Pharm. Rundschau* (Leitmeritz).

Sensitiveness of Permanganate of Potassium Towards Sun-light.

A. REISSMANN has observed that the dry crystals of permanganate of potassium, when exposed for some time to light, suffer a change in the surfaces thus exposed, the superficial layer being reduced to hydrated manganic peroxide. On dissolving the crystals in water, this external layer, which still possesses the form of the crystalline sides, remains behind as a shining sediment. The author concludes from this that solutions of permanganate suffer the same change along the sides of the vessels which are exposed to light, and that this change may be avoided by keeping the solution in the dark.

That the last-mentioned method of keeping permanganate solution conduces to its stability, has been observed before, although an absolute stability has probably never been attained. After *Zeitsch. f. Anal. Chem.*, 1885, 84.

The Detection of Aloes.

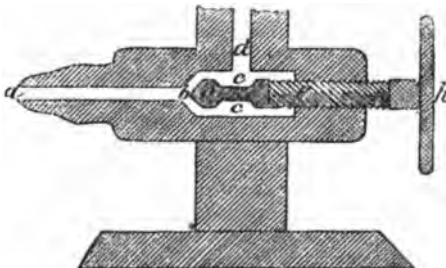
MR. R. A. CRIPPS and T. S. DYMOND have proposed a new color-test for the detection of aloes in pharmaceutical preparations. Hitherto the best method was that proposed by Bornträger, which consisted in extracting the substance with alcohol, filtering, shaking the filtrate with benzol, removing the benzol layer, and agitating it with ammonia. On standing, the aqueous liquid should assume a pink color in presence of aloes. The coloration was tardy in production, and it has been shown by Lenz that any substance containing chrysophanic acid gives a similar result. Klunge's test consisted in adding a drop of copper sulphate solution to a very dilute, almost colorless solution of the suspected substance; an intense yellow changed by warming with sodium chloride to a deep red or violet indicated aloes. But all varieties of aloes do not give this deep red, nor is the distinctive yellow seen in solutions already containing yellow coloring-matter, such as saffron. The authors have, therefore, devised a new test, intended to be applied directly to a solid substance: Place 1 grain of the substance in a glass mortar standing on white paper, add 16 drops of strong sulphuric acid, and triturate till the whole is dissolved; add 4 drops of nitric acid, sp. gr. 1.42, and lastly 1 oz. of distilled water. If aloes be present, a color varying from deep orange to crimson will be produced, according to the kind of aloes employed. To confirm, add ammonia when the color is deepened, usually to a deep claret. By this means not only is aloes detected, but the kind of aloes is indicated. Barbados, true Socotrine, and Natal produce a crimson, while Hepatic and Cape give only a deep orange-red col-

oration. For comparison, H_2SO_4 and vapor of HNO_3 were also employed, which produce with certain aloes a play of colors passing through green, blue, and violet to crimson.

A large number of complex preparations were examined, when it was seen that, though the presence of aloes never failed to make itself manifest, rhubarb and substances containing chrysophanic acid behaved in the same way. But using this test, a nearly colorless solution of aloes does not become pink on the addition of ammonia, as is the case with solutions of chrysophanic acid, and in this way aloes may be distinguished.—*Chem. and Drugg.*

Detection of Carbolic Acid in Creasote.

WHEN a few drops of sweet spirit of nitre are mixed with a dilute solution of carbolic acid, and an equal volume of strong sulphuric acid added, a pink colored ring is formed, and on mixing, a red colored solution is obtained (Eykmann). In a paper communicated to the Edinburgh Chemists' Assistants Association, Mr. P. MacEwan proposes to take advantage of this reaction for the detection of phenol in creasote. Creasote gives a brown ring and brown solution, but if it contain phenol the sulphuric acid acquires a pink tint (transient, if a small percentage only is present), and when the layers are mixed a reddish-brown froth is produced. If the mixed solution from pure creasote be allowed to stand until the flocculence rises to the surface, the clear solution is found to be of a pale-brown color; but if the creasote contain phenol the solution is dark-red or reddish-brown.—*Chem. and Drugg.*



Halberman's Gas-Burner.

AN IMPROVED BURNER.

WHEN it is desired to adjust the size of the flame issuing from any of the ordinary gas-burners so as to produce a certain constant temperature, it is found very difficult to do so, as a delicate adjustment of the ordinary gas stop-cock cannot well be managed by turning it with the hand. J. Halberman overcomes this defect by employing a burner constructed as shown in the illustration, in which the adjustment may be effected by a valve-cock, the stem of which carries a screw-thread. The gas enters at *a*, where a rubber-tube connects the burner with the supply-pipe, and it issues at *d*. The upper part of the burner may be of any special construction desired.—*Chem. Centralbl.*

The Detection of Caramel.

DR. KARL AMTHOR has founded a method for the detection of caramel in white wines and spirits, upon the following reaction: If para-aldehyde be added to an alcoholic liquid colored with caramel, a brown precipitate is formed, and on adding sufficient para-aldehyde the liquid is decolorized.

The author proceeds as follows: To 10 C.c. of the liquid to be examined are added 30-50 C.c. para-aldehyde (according to the intensity of the color), alcohol being added in sufficient quantity to cause the liquids to mix. (For wine 15-20 C.c. are sufficient). If caramel be present, a brownish-

yellow to deep brown precipitate is formed after twenty-four hours. The supernatant liquid is decanted, and the para-aldehyde washed out with absolute alcohol. The precipitate is then dissolved in hot water, filtered and concentrated to 1 C.c. The amount of caramel can now be roughly estimated from the intensity of the color. If only a small quantity of caramel be present in the wine, it must be concentrated over sulphuric acid, and proceeded with as above. Evaporation by warming is to be avoided, as substances resembling caramel are very easily formed and lead to false results.

The caramel precipitate with para-aldehyde can be confirmed by adding a solution of phenylhydrazin hydrochloride (2 parts of phenylhydrazin hydrochloride, 3 parts of sodium acetate, and 20 parts water) to the filtered solution of the caramel precipitate in hot water. After 24 hours an amorphous brown precipitate separates out. If only a small quantity be present, the solution becomes just turbid, and the precipitate forms after 24 hours.

The solution of the white precipitate formed by adding para-aldehyde to a pure white wine, gives no precipitate with phenylhydrazin.—*Zeitsch. anal. Chem. and Analyst.*

Menthol and Menthol Cones.*

MENTHOL has been known for a long period of time, but it is only during the last two years that it has become, owing to its great consumption in the manufacture of menthol cones or pencils, an article of commercial importance.

Menthol has been used by the Japanese for nearly two hundred years, and is known by them as "Hakka-no-sei" or "Hakka-no-Hair." Previous to the late change in the social system of Japan, the native gentlemen there were accustomed to carry attached to their girdle a medicine-box, which contained, among other things, a compound called "Hotan," of which menthol was one of the principal ingredients.

As early as 1829, the composition of menthol had been investigated by the chemists Walter, Blanchett, Sell, and Dumas, by whom the substance was known as peppermint or solidified oil of peppermint. Oppenheim mentions, in 1862, a Japanese oil of peppermint derived from *Mentha Arvensis* of which the melting-point was 36° C., the boiling-point 210 C., and the percentage composition.

C.....	76.93
H.....	13.40
O.....	9.67

In 1864, Mr. John Mackay, of Edinburgh, Scotland, notes the arrival in London of a quantity of Chinese oil of peppermint, some of the canisters of which had the peculiarity of becoming solid in cold weather. Mr. John Moss, in 1874, speaks of both the solid and liquid oils of peppermint as having arrived from Japan. The fusing-point of the solid oil he found to be 39° C., and the boiling-point 215° C. This same menthol was handed by Mr. Moss to Messrs. Beckett and Wright for examination, and after purification these chemists found its melting and boiling points to be 42.2° C. and 212° C. respectively, while by combustion they got 76.35 per cent of carbon, and 12.91 per cent of hydrogen. Menthol, which is a stearoptene oil of peppermint, has also been investigated by Atkinson and Yoshida, and its formula is now generally recognized as being $C_{10}H_{18}O$. Menthol is a proximate principle in oil of peppermint, but it appears to exist in larger proportion in the oil obtained from *Mentha arvensis* var. *purpurea*.

* Paper read by G. C. Waldie, of New York, before Hawick Pharm. and Chem. Assoc., England, Feb. 10th, 1885.

scens, than in any other oil. A variety of menthol is obtained in Michigan from the oil of *Mentha piperita*, which it has been proposed to call "pipmenthol," in order to distinguish it from the Japanese article. Pipmenthol has a distinct odor of oil of peppermint, whereas menthol has that odor but slightly.

Mentha arvensis, var. *purpurascens* is a perennial herbaceous plant, with a creeping root, and quadrangular, purplish colored, and hairy stem.

The leaves are opposite, serrate, smoother on the upper than on the lower surface, and of a dark greenish-purple color, with a lighter shade of purple underneath. Clusters of small purplish-white flowers are produced on the axils of the leaves, and the plant grows to a height of from one to three feet.

There is apt to grow amongst this species of mentha a plant yielding inferior oil of peppermint, for which the name of *Mentha arvensis*, var. *vulgatissima* has been proposed.

The plant grows both on wet and dry soils, but is best suited with one that is light and sandy. It is propagated by the root, pieces of which, six inches long, are thickly planted in the ground in November, and left until spring.

The ground is previously prepared by being well dug with spades and divided into ridges, in which the roots are placed. In the spring, the roots have grown about three inches above the ground, and the roots are then transplanted to a previously-prepared site, and liberally supplied with good manure. The plant blossoms in June, the length of the herb being from eighteen to twenty-four inches. It is then cut, a dry morning after rain being best suited for this operation. This gives the first crop, which is made up into bundles and dried in the shade. The ground is again manured, and a second crop is obtained in August.

The average yield of the dried herb is five tons per acre, but it varies greatly according to the weather, the nature of the soil, and the quantity of manure made use of. The plant grown in a dry season yields a much better oil, and this contains a larger percentage of menthol, though the yield per acre of the herb is less.

The cultivation of this plant rapidly exhausts the soil, and farmers are obliged to rotate their crops carefully.

The oil is extracted from the herb by the farmers by means of steam-distillation, the apparatus employed being of a somewhat primitive description. This operation gives crude oil of peppermint, and this is what the farmers sell to the agents who collect it from them.

Menthol is obtained in the laboratory by cooling the oil to 15° C., when the stearoptene readily crystallizes in large trimetric crystals. These, when purified by repeated crystallization, are in appearance not unlike magnesium sulphate. The crude oil contains from 50 to 60 per cent of menthol, and in exceptionally dry seasons as much as 75 per cent has been obtained. Commercial menthols melt at from 37.7° to 42.2° C., the melting-point depending on the freedom of the menthol from essential oil; a small percentage of essential oil lowers the melting-point considerably.

Menthol is very soluble in alcohol, ethers, chloroform, bisulphide of carbon, and most oils, but is more soluble in oil of peppermint than in any other. It has a specific gravity of 0.890, and small particles gyrate on the surface of water like camphor. Several compounds of menthol have been obtained, the acetate, which is got by heating menthol with glacial acetic acid, being a light oil-like body without color. By substituting butyric for acetic acid butyrate of menthol [?] is obtained. The compounds of the alkalies and menthol

are very unstable, and need not be considered.

The following are regarded as reliable tests for the purity of menthol:—

1. It should be completely and readily soluble in twice its weight of chloroform. On the addition of a small quantity of iodine to this solution a rich indigo-blue color (not dark green) ought to be imparted, and this color should be completely discharged on shaking the mixture with solution of caustic potash or soda.

2. The melting-point ought to be 42.2° C. (108° F.), and the boiling-point not lower than 212° C. (413.6° F.), and there should be no residue on evaporation.

3. Menthol shaken with an oxidizing mixture, such as sulphuric acid and bichromate of potash, ought to be entirely converted after prolonged heating into a dark green flocculous substance (menthene).

4. Strong sulphuric acid ought not in the cold to blacken menthol to any considerable extent.

5. When menthol is heated with a small quantity of anhydrous zinc chloride, the mixture ought to give off the odor of menthene.

6. Strong caustic potash solution has no action on pure menthol.

It is only within the last three or four years that the value of menthol has been recognized by Western nations. The *Lancet* (London) drew attention to it in 1879, and since that period many medical men, both in Great Britain and America, have published their experiences of it as a remedy for diseases, such as headache, neuralgia, toothache, epidemic influenza, etc. So popular has this specific become that at the present day by far the largest proportion of the menthol produced is employed in the manufacture of menthol cones, which are made use of as a household remedy for nervous diseases such as those mentioned.

Menthol intended for the manufacture of cones must be without a trace of oil of peppermint, as the smallest percentage of the latter lowers the melting-point so much as to render it quite unsuitable for this purpose. As yet there are very few makes in the market suitable for cones, but it is highly probable that in the near future the contamination of menthol with oil will be entirely obviated in the process of production.

Menthol cones are made in the same way as suppositories, the menthol being first fused and then poured into metal moulds. The placing of the cones in the wooden cases is accomplished by simply heating the proper end of the cone in a small flame, as sealing-wax is heated, and quickly placing it in the recess. Wooden cases are preferable to those made of metal, the latter, owing to the property metal possesses of being a good conductor, being apt to get heated in warm climates. The result is that the menthol which touches the metal melts, and the cone becomes quite loose.

The different menthol cones in the market may be classed under five heads.

1. Cones prepared from pure menthol, that is, menthol having a melting-point of 42.2° C. The characteristics of these cones are that they are hard, and when scraped with the finger-nail feel gritty and stonelike. When rubbed on the skin they are susceptible of a high polish. The cone is completely soluble in alcohol, and a small piece heated in a test-tube melts very readily.

2. Cones that have been prepared with menthol that has not been completely freed from oil of peppermint. These are recognized by their comparatively strong odor of peppermint, and by their melting-point being under 42.2° C.

3. Cones made of wax, stearin, cetaceum, or paraffin, with varying pro-

portions of menthol. The menthol used in this class has not, as a rule, been completely freed from oil of peppermint.

These, when scraped with the finger-nail, have not the stone-like grit characteristic of the first class, but feel soft and yielding, and small pieces readily peel off. When a small portion is heated in a test tube, a little is melted from the outside, and the remainder floats in the liquid thus formed, at the same time slowly dissolving. A fragment placed in cold alcohol does not dissolve; if the cone has a larger percentage of menthol than wax, etc., the edge of the fragment becomes fringed, owing to the menthol dissolving out and leaving the wax which was disseminated throughout the cone as a framework; but if the wax be in excess the alcohol has no visible effect. If the alcohol be heated the fragment liquefies; the menthol dissolves in the alcohol, and the wax solidifies on cooling. The proportions of both may in this way be determined.

4. Cones consisting of menthol, with the addition of some powder as an adulterant.

These are recognized by simply rubbing them on the skin, when they impart a feeling as if the latter were being rubbed with pumice-stone soap. This is owing to the menthol dissolving out and leaving the grains of insoluble powder sticking on the cone like the pumice-stone in the soap.

5. Cones which may belong to any of the above classes, but which contain in addition a small percentage of eucalyptol, thymol, benzoic acid, or other irritant.

The distinguishing feature of this class is the intense prickling sensation experienced when the cone is applied to the skin, which presently assumes a bright scarlet appearance, the irritating effect produced by these substances being quite distinct from the cooling sensation imparted by menthol.

The action of menthol depends on its rapid and complete evaporation from the skin; but when a cone composed of greasy matter and menthol is used, the grease retards, if it does not actually prevent, this evaporation, and thus causes the menthol to act as an irritant. Pure menthol cones slowly evaporate on exposure to the air; in cones made partly of fatty matters this tendency is greatly checked. When any powder has been used to adulterate the menthol, it is seen as a coating on the outside of the cone after the latter has been exposed for a few days, the non-volatile powder having been left behind after the menthol had evaporated. It is clear, therefore, that only the purest menthol is suitable for the preparation of cones, and that no admixture of any kind ought to be employed in their manufacture.

Styrone as a Disinfectant.—Dr. S. A. Popoff has found that styrone is a more powerful antiseptic than either phenol or thymol. A specimen of urine to which styrone (1 to 500) has been added showed no trace of decomposition at the end of three and a half months. A few experiments with styracin showed that it also possesses very strong antiseptic properties. Styrone is cinnamic alcohol, and can be obtained by treating styracin with concentrated solution of potash. It is not present in liquid storax, from which styracin may be extracted by ether, benzol, or alcohol, after the separation from the resin of the cinnamic acid.

Asthma Cigarettes.—Impregnate well-nitred tobacco with an alcoholic fluid extract of grindelia; let dry, and use in cigarettes. Owing to the nitre, they will continue to glow and to develop smoke.—*Boston Journal of Chemistry.*

Unpleasant Taste from Wooden Vessels.—It is often found desirable to remove the unpleasant taste which is frequently observable from new wooden vessels. This is often a thing difficult of accomplishment. An exchange suggests that the simplest plan, and one that will succeed in most cases, is to scald them thoroughly several times with boiling water; then dissolve some pearlash or soda in luke-warm water, adding a little lime to it, and wash the inside of the vessels well with the solution. Afterwards scald them again thoroughly several times with boiling water as before.

To Decolorize Gum-Arabic.—Strain a solution of gum-arabic through calico, mix with freshly precipitated (moist) hydrate of alumina, and strain through a linen cloth.

Ribbon Ink, such as is used on the type-writers:

Anilin Black..... $\frac{1}{2}$ oz.

Alcohol..... 15 "

Concentrated Glycerin. 15 "

Dissolve the anilin black in the alcohol, and add the glycerin.—*Scient. American.*

Antiseptic Mouth Wash.—Magitot's formula consists of:

Borate of Sodium.....15 grains.

Thymol..... 8 "

Distilled Water..... 1 pint.

This not only removes foetor of breath, but lessens sensitiveness of the teeth.

Pressure in Mineral Water and other Bottles.—The average pressure in soda and some other mineral water bottles is about 56 lbs. per square inch, when filled from cylinders pressed to 145 lbs. per square inch. When filled from cylinders in which the aerated water is at a pressure of 100 lbs., the pressure on the bottle is, on an average, nearly 49 lbs. per square inch. The pressure in the champagne bottles during fermentation was seen at the cellars of Messrs. Deinhardt & Co., Coblenz, by some of the members of the Iron and Steel Institute, to reach, and (in some cases) exceed, a pressure of seven atmospheres, or an average of about 105 lbs. per square inch.

Syrup of Violets.—The formula of the Pharm. Lond. was as follows: Fresh petals of *Viola odorata* 3ix.; boiling distilled water, Oj. Macerate for twelve hours, express and strain. Let the drugs subside and dissolve in the clear liquor, by the aid of gentle heat, twice its weight of sugar. When the syrup has cooled, add fl 3ss. of rectified spirit to each fl 3i. of syrup.

Jaravanda Lancifolia.—Mennel reports in the *Br. Med. Jour.* fourteen cases of urethritis and secondary syphilis treated with this remedy with good results. Fifteen minims of the tincture internally, or ten minims with water as an injection, is the dose.

Phosphide of Zinc, according to Decoux, has no properties as a remedy for irregular menstruation not possessed by phosphorus, excepting its greater safety and manageability. The dose is a sixth of a grain, in pill form, morning and night.

Quinoline, according to Seiffert, is a valuable local remedy in diphtheria, when employed in a five-percent solution. A fall in temperature and improvement in local and general conditions results.

Harmful Effects of Boric Acid as a Food Preserver.—J. Foster concludes from a series of experiments, that the use of boric acid as a food preservative either interferes with the usefulness of some of the elements of the food, or causes intestinal catarrh. It is, therefore, by no means harmless when thus used.—*Zeitsch. Anal. Chem.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,450.—Peppermint (C. A. D.).

As a supplement to our reply to query 1,414 in our February number, we publish the following:

DEAR SIR:—We have written so much upon menthol and the plant yielding it, that we were surprised when our attention was called by a member of the Pharmaceutical Society to your notice on page 38, No. 1,414, referring the people to Thistleton Dyer, of Kew, whereas you have had it recorded in your paper that we are the growers and introducers of the Japanese plant. We have furnished Mr. A. M. Todd with his stock of plants, and have sent specimens to the different botanical gardens in Europe, and also America. There are other houses we have furnished in America with the true variety.

We are yours faithfully,
THOMAS CHRISTY.

155 Fenchurch st.,

LONDON, E. C., Feb. 24th, 1885.

We confess to an oversight in not giving Mr. Christy's address in our February answer, and regret it the more because Mr. Christy has so long been known as one of the most extensive and reliable dealers in foreign medicinal plants.

No. 1,451.—Mirin-shu (Rice Wine).

Made from what is known as Mochi-gome rice. The rice is first steamed and then put in a barrel with water and left twenty-one days, and then this water is decanted off and afterward mixed with what is pressed from the rice.

The after-process must be similar to the making of grape wine, as there appears to be considerable spirit and other indications of fermentation. This mochi-gome rice is a quality of glutinous rice much used for making bread—a commoner quality than such as is used in this country—some is imported, but no regular demand for it.

No. 1,452.—Gelatin Dry-Plates.

A correspondent on the Pacific Coast wishes for some practical directions for making gelatin dry-plates for photographing. We have at hand a number of articles on this topic in photographic journals, but for any one besides a person engaged in the business they would be of but little practical value. In a recent lecture delivered before the Chemists' Assistants' Association, by Mr. C. F. Wyatt,* on practical photography, he remarked that "the manufacture of these gelatin dry-plates is very troublesome, and as they can be bought ready for use at a reasonable price, I should strongly recommend any one not to make them."

"I have made some myself, but shall probably not repeat it, as the plates cost rather more than they could have been bought for, besides requiring, on an average, about an hour's time for each plate that is fit for use."

A number of excellent makers in this country can supply plates packed

so that they may be safely shipped to any part of the world, and from some personal experience we strongly indorse what Mr. Wyatt has said about the expediency of attempting to make them.

No. 1,453.—"Black Heads" (M. C. S., Madison, Ind.).

"Black Heads," "Flesh Worms," and "Pimples" are all phases of what is called by doctors, *Acne*. It is most common to both sexes about the age of puberty and consists, generally, in a very abundant secretion of fatty matter by the sebaceous glands of the skin. When the skin adjoining the gland is squeezed the fatty matter is shaped by the narrow orifice into a grub-like mass, and the dirt that has adhered to the secretion gives to the portion first extruded the semblance of a head. When the flesh around the gland becomes inflamed it gives rise to a pimple. The simple remedy consists in removing the excessive amount of fat, and this is best done by washing the face at bed-time for five minutes or more, with a half pint of hot water to which a teaspoonful of water of ammonia has been added, using a small, soft sponge for its application. Do this every night for a considerable period—say a fortnight.

No. 1,454.—"Thumps" (A. S., Milford, Mass.).

The disease in the horse known as "thumps" is palpitation of the heart, and, like the same symptom occurring in the human subject, may be caused by derangement of the digestive or respiratory organs; by an impoverished blood, by nervousness or by overwork, in which cases it may be relieved, but when it results from actual disease of the heart itself a "sure cure," such as you desire, is hardly possible.

Tellor says: "Careful avoidance of sudden excitement and over-exertion are to be looked to in the first place. Full doses of digitalis, say one-half drachm of the powdered leaves may be given twice a day in the food for several weeks. Indigestion and constipation must be prevented by appropriate treatment. Frequently the digitalis may be combined with salines with advantage, as:

Powdered Digitalis

leaves..... 30 grains.

Chlorate of Potassium, $\frac{1}{4}$ oz.

Or Nitrate of Potassium, 1 oz.

To be given once a day.

When the palpitation is associated with increased size of the heart, and a full and strong pulse, it is better to use aconite: Tincture of aconite-root, 20 drops, to be used in the above prescription instead of the potash, or dropped into the drinking water, twice a day."

No. 1,455.—Red Color in Carbolic Acid (O. R.).

This correspondent asks how the red color may be removed from Calvert's carbolic acid. It would seem that some one suggested to him to add an equal volume of glycerin; but this did not turn out satisfactory, at which we are not at all surprised. We have frequently printed papers and abstracts of papers treating on the red-dening of carbolic acid, its causes and prevention. Its cure, however, is a subject which has not been specially treated, but is sufficiently clear to any one who has read the articles carefully, or who has a knowledge of the chemical and physical properties of carbolic acid. This "cure," or the removal of the red color, can, of course, only be accomplished by redistilling the acid, which may be done in a retort, special care being taken that the heat is applied gradually and uniformly, and that none of the vapors escape or come in contact with the flame. The operation, however, will be scarcely profitable on a small scale.

* Chemist and Druggist.

As to the causes of the reddening, the presence of ammoniacal vapor has at one time been supposed to be the agent producing the tint; others supposed they had found it in nitrous acid. Lately it has been ascribed to the presence of traces of iron (see also last number, p. 56).

No. 1,456.—*Tinctura Amara* (R. McN., Philadelphia, Pa.).

Tincture Amara, or "Bitter Tincture," of the *Pharm. Germ.* as given in the latest edition, is

Gentian	3 parts.
Centaury	3 "
Orange-peel	2 "
Orange berries	1 "
Zedoary	1 "
Diluted alcohol	60 "

The drugs, finely cut or in coarse powder, are macerated for one week with the diluted alcohol, in a closed bottle, in a shady place, with frequent agitation, at a temperature of about 15° C. Then strain and, after standing for a time to allow any sediment to settle, filter with precaution as regards evaporation of the alcohol.

No. 1,457.—*Solidified Glycerin*.

There are several combinations which have received this name, at least commercially. One of these is glycerite of starch, which is official in the U. S. Ph., and is prepared by rubbing together, in a mortar, one part by weight of starch, and nine parts of glycerin, then transferring the mixture to a porcelain capsule and gradually heating to 140° C. (284° F.), taking care that the heat do not exceed 144° C. (291° F.), until the starch granules are completely dissolved, and a translucent jelly is formed. This may then be suitably scented, and admirably answers all purposes for which glycerin is valuable as an external application.

Another is to dissolve one part of so-called transparent soap in a mixture of four parts of water and four parts of glycerin by the aid of heat, and then to add twenty parts more of glycerin. If desired softer, more water may be added. When nearly cold, perfume to taste, and pour into glass jars.

If you want the glycerite as firm as simple cerate, you may slightly increase the quantity of starch, but you will have to take particular care that the gelatinizing portion of the contents of the capsule is constantly being scraped off, so as to prevent overheating.

No. 1,458.—*Hand Decoction Apparatus* (A. F., Knoxville, Tenn.).

The hand-decoction vessels, described on page 46, are of German manufacture. We will suggest that you write to E. A. Lentz, of Berlin, or to Dr. Herman Rohrbeck, maker of Pharmaceutical Apparatus, 100 Friedrich st., Berlin, N. W., for his catalogue (No. Xa) of pharmaceutical apparatus and utensils.

No. 1,459.—*Extraction of Alkaloids* (M. H. S.).

The article on alkaloids which you have seen in some back volume of this journal (*NEW REMEDIES*) may be either that published on page 239 of the vol. for 1876, or that on page 22 of the vol. for 1880. The former is an abstract by a paper of Rennard, in which the author recommends improvements in the method of extracting alkaloids in the medico-legal examination of animal organs. The second article contains an improved process for extracting alkaloids from vegetable products. In connection with the above, you might read with advantage Mr. H. B. Parsons' article on alkaloids, in *NEW REM.*, 1879, p. 153.

No. 1,460.—*Compound Elixir of Taraxacum* (E. J.).

Since the publication of the formula

adopted by the Joint Committee which prepared the New York and Brooklyn Formulary, this has probably been more generally followed than any other. We will reprint it here:

Taraxacum	480 grains.
Wild Cherry	480 "
Sweet Orange Peel	480 "
Liquorice Root, Russian, peeled	960 "
Cinnamon	120 "
Cardamom	120 "
Canada Snake Root	120 "
Caraway	120 "
Cloves	120 "
Pure Extract of Liquorice	60 "
Alcohol,	
Water, each	q. s.
Syrup	32 fl. oz.

Grind the solid substances to a moderately coarse powder and percolate, in the usual manner, with a mixture of one (1) volume of alcohol and two (2) volumes of water, until sixteen (16) fluid ounces of percolate are obtained. In this dissolve the extract, and lastly, add the syrup.

(If a precipitate should make its appearance in the elixir on standing, it should be incorporated with the liquid by shaking before use.)

No. 1,461.—*Cascara Cordial* (C. E. H.).

We presume you mean an elixir of Cascara, in which the disagreeable taste of the drug is covered as much as possible.

The "New York and Brooklyn Formulary" has adopted the following, which will answer your purpose:

Elixir Rhamni Purshianæ (Elixir of Cascara Sagrada).

Fluid Extract of Rhamnus Purshiana	4 fl. oz.
Compound Elixir of Taraxacum	4 fl. oz.
Simple Elixir	8 "

The formula for the Comp. Elixir of Taraxacum you will find elsewhere in this number.

No. 1,462.—*Separation of Albuminoids from Peptones* (E. B. S.).

The source to which you have been referred, for information about Stutzer's method of separating albuminoids from peptones, namely *Berichte d. Deutsch. Chem. Gesellsch.*, XIII, 251, does not give the process itself, but merely contains a general statement regarding the principle upon which the process is based, and the announcement that the paper on the subject would appear in full in another journal (*Journal f. Landwirthschaft*, 29, 473).

We will first give Stutzer's process, for separating protein bodies from other nitrogenized substances (after *Zeitsch. f. Anal. Chem.*, 1882, 600).

The substance is properly comminuted, and passed through a 1 millimeter sieve. 1 Gm. of it (or only 0.5 Gm. if the substance is rich in nitrogen), is then put in a beaker, a mixture of 1 C.c. of acetic acid and 100 C.c. of alcohol added, and the whole raised to boiling. After cooling, the liquid is passed through a flat filter, so that nothing, or but slight traces, of the insoluble matters are transferred to the filter. The latter is then washed with warm alcohol, for the purpose of removing acetic acid and any dissolved fats, and afterwards set aside. To the residue remaining in the beaker 100 C.c. of water are added, the mixture is either heated to boiling, or to a temperature of 90° C., continued for 10 minutes, on a water-bath, and when partly cooled mixed with 0.3 to 0.4 Gm. of cupric hydrate made into a paste. After a few minutes, the insoluble matters are transferred to the filter previously used, and the latter well washed, whereby all other nitrogenized bodies pass into solution. The residue is then dried at 100–110° C., and the nitrogen determined in it by combustion

with soda-lime (described in detail in *Journal f. Landw.* 1880, 106). The difference between the figure thus found, and the total nitrogen contained in the original substance corresponds to the quantity of nitrogenized bodies present that are not proteins.

According to another reference, which we cannot trace to its true source for the moment, Stutzer separates the albumins from the peptones as follows: The solution is slightly acidulated with acetic acid and then mixed with hydrated cupric oxide, in the proportion given above. This causes a precipitate of the albumins. The nitrogen in this precipitate is determined by combustion with soda-lime, and the amount found, multiplied by 6.25, corresponds to albumin. The filtrate left from the last operation is then acidulated with hydrochloric acid and mixed with solution of phosphomolybdic acid, which precipitates the peptones. These are then determined in the same manner.

No. 1,463.—*Manifold Paper* (Rochester, N. Y.).

A formula which has been well recommended to us says: "Take lard oil or sweet oil, mixed to the consistence of cream with either of the following pigments, according to the color desired: Prussian blue, lamp-black, Venetian red, or chrome green, either of which should be rubbed with a knife on a plate or stone until smooth. Use rather thin but firm paper; put on with a sponge, and wipe off as dry as convenient, then lay between sheets of uncolored paper, and press (under books or some other weight) until the surplus oil is absorbed when the sheets will be ready for use.

No. 1,464.—*Removal of Potash from Sugar Beet Juice* (G. H. H.).

Our correspondent writes: "Can any of your readers give me any information as to what process will remove the potash from sugar beet juice?"

We should be very glad ourselves to know such a process, but must confess that we know of none which is practicable on a large scale. On a small scale it is easy enough to remove potassium with platinic chloride, or with hydrofluosilicic acid. The last named agent has even been tried on the large scale, but was not found to work well, owing to the difficulty of removing the products of the reaction and the excess of the reagent. We can, however, not conceive what object the removal of potassium could have, since the juice contains other bases, which, together, render the final residue—beet sugar molasses—so saline and disagreeable that it is unfit for culinary purposes. Beet juice contains a small quantity of mineral constituents, which increase in proportion as the juice is concentrated, and which are finally left in the molasses, after the sugar has crystallized out. Some of these (as calcium salts) can be and are removed by appropriate processes; but potassium and sodium salts are not separated, as there is no practical process available for their removal. If any of our readers can throw light on this subject, we shall be much obliged.

No. 1,465.—*Churchill's Hypophosphites* (H. E. H.).

What is sometimes called Churchill's Syrup of Hypophosphites of Lime and Soda did not, we believe, originate with Dr. Churchill, but should rather have been called Syrup of Churchill's hypophosphites, as he was the first to introduce the hypophosphites into medical practice. At this day, the word Churchill should be dropped, since we have an excellent official syrup containing calcium, sodium and potassium hypophosphites. The N. Y. and B. Formulary also contains the following formula for

Syrupus Calcii et Sodii Hypophosphitum.

Hypophosphite of Calcium. 256 grs.
Hypophosphite of Sodium. 256 "
Sugar..... 12 av. oz.
Water, enough to make.... 16 fl. oz.

Dissolve the hypophosphites in eight fluid ounces of cold water, add the sugar, dissolve it by agitation, filter, and add enough water through the filter to make sixteen fluid ounces.

There are, however, three simple syrups ascribed to Churchill, namely:

Syrup of Hypophosphite of Calcium.

	Parts.
Hypophosphite Calcium..	2
Sugar.....	131
Water.....	70

Syrup of Hypophosphite of Sodium.

	Parts.
Hypophosphite Sodium...	5
Orange Flower Water....	50
Syrup.....	350

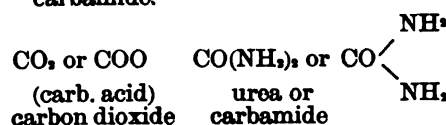
Syrup of Hypophosphite of Ammonium.

	Parts.
Hypophosphite Ammonium..	1
Syrup.....	100
Water.....	100

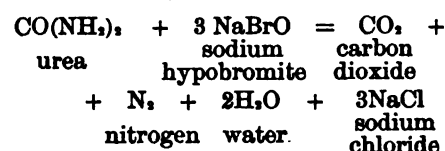
No. 1,467.—Urea and Hypobromite (N. N.).

This correspondent asks what reaction takes place when hypobromite of sodium acts upon urea so that the nitrogen of the latter is eliminated.

Urea is a true derivative of carbonic acid, or rather, carbon dioxide, one of the dyad oxygen atoms being replaced by two monad amide (NH₂) molecules. For this reason urea is also called "carbamide."

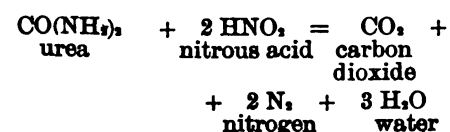


Now when a hypobromite or a hypochlorite acts on urea, 1 molecule of the latter reacts with 3 molecules of either of the former, thus:

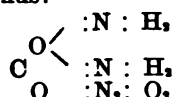


In fact, the whole of the nitrogen of the urea is eliminated as gas, mixed with carbonic acid gas, which latter is removed from the mixture by absorption in a caustic alkali.

A similar reaction takes place when urea comes in contact with nitrous acid. In this case, however, not only the nitrogen of the urea, but also the whole of that of the nitrous acid is liberated.



As the water in nitrous acid is not involved in the reaction, we may consider the anhydrous acid N₂O₂ to be alone involved in the reaction. To aid the memory, the latter may then be sketched thus:



This means that all the nitrogen (N₄) goes together and passes off, leaving on the one hand carbonic acid gas (CO₂), and on the other hand, 2 mol. of water.

No. 1,468.—Murdoch's Liquid Food (B.).

This is described to be "an extract of beef, mutton and fruits, containing [blood-] corpuscles and 12½ per cent

soluble albumen." According to the *London Lancet* it gives the blood spectrum very strongly and contains so much albumen as to become almost solid with dilute nitric acid.

We are not aware that an analysis has ever been made of the article. This could, however, scarcely be expected to throw much light on its method of preparation. It will be easy for you to test the article practically without having to resort to a chemist, who will certainly charge you at least five and possibly ten times the sum you mention for an analysis that might be worth having.

No. 1,469.—Safranine (W. H. B.).

This coloring agent may be obtained in New York from importers of anilin colors, for instance, from Lutz and Movius, 15 Warren street, who quote three grades on their list.

We may add that Safranine is a monad base forming crystallizable salts with acids, which become decomposed when warmed in presence of much water. Safranine has a greater resistance towards reagents than true anilin colors. Safranine is derived from toluol, by producing from the latter into amido-derivatives and oxidizing the latter.

Free safranine is easily soluble in water and alcohol, but insoluble in ether. The hydrochlorate is a little less soluble. The latter imparts, both to an aqueous and to an alcoholic solution, an intense reddish-yellow color, with a peculiar fluorescence. It constitutes the greater portion of the commercial "safranine" which is put on the market either as a powder or as a paste.

By the way, red, orange and yellow coloring matters suitable for soap-makers' and perfumers' use are also in the market and may be obtained from wholesale dealers in essential oils.

No. 1,470.—Liquid Shoe-Polish (G. F. H.).

We will give you a few formulæ from good authorities, but wish it to be understood that we have no personal experience with them.

	Parts.
1. Boiled Linseed Oil.....	200
Burnt Umber, in fine powder	40
Asphalt, in fine powder.....	80
Oil of Turpentin.....	200

Heat the boiled oil with the umber and asphalt, in an iron kettle, over an open fire, to near the boiling point of the oil. Have a cover ready for the pot in case the oil should take fire. When the mixture appears quite homogeneous and apparent solution has taken place, let cool and add before the mixture is cold, the oil of turpentin.

This lacquer should be rather thin-fluid when applied to leather, and may be warmed a little for this purpose. A few hours after being applied it produces a beautiful shining coat of great durability.

	Parts.
2. Caoutchouc, sliced.....	100
Petroleum.....	100
Bisulphide of Carbon.....	100
Shellac.....	400
Lampblack.....	200
Oil of Lavender.....	10
Alcohol.....	2,000

Upon the caoutchouc contained in the bottle, pour the bisulphide of carbon, cork the bottle well and let it stand for a few days, or until the caoutchouc has become thoroughly gelatinized or partly dissolved.

Then add the petroleum, oil of lavender and alcohol, next the shellac in fine powder, and heat the bottle to a temperature of about 50° C. (122° F.), taking care that as little as possible is lost by evaporation. (This may be avoided, in a well appointed labora-

tory, by an upright condenser.) When the substances are all dissolved, and the liquid is tolerably clear, add the lamp-black, mix it thoroughly by shaking, or better, incorporate it by trituration with the liquid, and fill the mixture at once into small bottles.

This lacquer dries rapidly and produces a deep black glossy coat of considerable elasticity. The latter may be increased by adding a little crude turpentin to the mixture.

	Parts.
3. Caoutchouc.....	10
Petroleum.....	20
Oil of Turpentin.....	10
Lampblack.....	50
Boiled Linseed Oil.....	500

Digest the caoutchouc with the oil of turpentin and petroleum until it is dissolved, then add the linseed oil, and lastly incorporate the lampblack.

No. 1,471.—Elixirs (J. G. H.).

This correspondent says that he has had trouble with his elixirs, many of them forming precipitates, although he worked very carefully.

In reply we would say that it is impossible to suggest a remedy as long as the precise formula and process followed in each case is not stated. The precipitate is most likely caused in one of two ways:

1. Either the liquid is too alcoholic to retain in solution those constituents which are little soluble in alcohol.
2. Or the liquid is too aqueous, there being too little alcohol to keep in solution resins, oils, and other principles chiefly soluble in alcohol.

In many cases it is impossible to so adjust the proportion of alcohol and water that no precipitate belonging to either class will be formed. Often there are both kinds of precipitates, sometimes, in highly alcoholic or highly aqueous liquids, there is only one. If a precipitate appears, the question is only whether the precipitate is an essential constituent of the elixir. If so, the liquids of the latter must be readjusted so as to keep the useful constituent in solution. On the other hand, if the precipitate is valueless, it is merely filtered out and thrown away. However, if the precipitate was caused by the presence of too much alcohol, it is certainly more economical to reduce, if possible, the proportion of alcohol which will often result in the liquid remaining clear.

We would suggest that you try the formulæ for elixirs given in the New York and Brooklyn Formulary, copies of which may be obtained from Mr. O. J. Griffin, Clerk of College of Pharmacy, 209-211 East Twenty-third street, New York.

No. 1,472.—Mathematical Chemistry (J. G. H.).

This correspondent wants to know where he can get a "mathematical chemistry;" that is a book to aid him in working out chemical formulæ, such as these: How much anhydrous ferric oxide is required, theoretically, to yield 100 parts of metallic iron? or, How much sulphate of quinine will be required to furnish 5 av. oz. of pure quinine, etc., etc.

Our correspondent probably means a work containing a collection of problems to be worked out for exercise. There are a number of such books in existence, of which we will quote two for the present, one in English: Woodward, C. J., "Arithmetical Chemistry; or arithmetical exercises for chemical students," two parts, London, Simpkin (to be obtained through J. H. Vail & Co., 21 Astor place, N. Y.), and one in German: Stammer, Dr. Karl, "Sammlung von chemischen Rechenaufgaben," 2te Aufl., Braunschweig, 1878 (to be obtained through some German importing book dealer).

None of these works, however, gives

a complete explanation of every problem, and, indeed, this cannot be expected, and besides, would detract from the utility of the work itself. The knowledge requisite for solving the problems must be acquired from a systematic study of chemistry, chemical processes and reactions. When the latter are thoroughly understood, there will be no difficulty in calculating any problem involving them. Our correspondent lives in a city where there is a good college of pharmacy. We would advise him to attend the lectures there, which will soon put him in a position to understand the subject.

The two problems above mentioned have the following solution:

1. As 111.8 parts of iron (contained in the molecule Fe_2O_3 , $111.8 + 48 = 159.8$) is to 100 parts of iron, so are 159.8 parts (or the molecular weight) of ferric oxide to the required (x) parts of ferric oxide,

$$\frac{111.8 : 100 = 159.8 : x}{x = 142.93}$$

Hence, to produce 100 parts of metallic iron, it requires 142.93 parts of ferric oxide.

2. As 648 parts (the double molecular weight) of quinine contained in one molecule of sulphate of quinine, is to 872 parts (or the molecular weight) of sulphate of quinine, so are 5 av. oz. of quinine to the weight of sulphate of quinine required. Substituting "grains" for parts and oz., we have:

$$\frac{648 : 872 = 2187.5 : x}{x = 2942.4 \text{ grains of sulphate.}}$$

The other problems given by our correspondent we leave now for his own calculation.

No. 1,473.—Determination of Melting Points of Fats (A. J. O.).

Besides other methods heretofore mentioned in our journal, we can recommend the following, which was originally proposed by Dr. Kratschmer, in Vienna, and which answers the purpose admirably.

Introduce the substance to be tested into a narrow, nearly capillary glass-tube, closed at the bottom, and when it has become solidified, introduce a droplet of mercury which will remain on top of the column. At the moment when the congealed fat in the tube becomes liquid, the drop of mercury sinks. The temperature is read off from a thermometer attached to the capillary glass-tube. If desired, the same sample may be repeatedly treated in the tube in the same manner.

No. 1,474.—Hager's Dyspepsia Pills (U.).

Hager recommends the following in case of enfeebled digestion, dyspepsia, sour stomach, "Katzenjammer" or "Kater," and other gastric disturbances:

	Gm.	Gr.
Cinchonid. Sulphatis.....	5.0	75
Pepsini.....	32.0	480
Zingiberis.....	2.0	30
Pimentæ.....	2.0	30
Cardamomi.....	2.0	30
Gentianæ.....	12.5	188
Althææ.....	2.0	30
Tragacanthæ.....	4.0	60
Glycerini.....	8.0	120
Acidi Hydrochlorici (25%).....	10.0	150
Aquæ Destillatæ.....	6.0	90

Mix intimately and make into 480 pills. Expose them to the air for one day, then coat them with sugar or other material.

Four or five of these pills may be taken during or after a meal. When the stomach rejects food, after excessive use of alcohol, 2-3 pills may be taken every hour during 12 hours. In "Katzenjammer" 5 pills may be taken every half hour during 5 or 6 hours.

No. 1,475.—German Receiptology (Subscriber).

This correspondent wants to have

pointed out to him some work, from which he may learn the methods by which German physicians prescribe, and also the directions, phrases, terms and signs used by them.

There are many such books, in fact, it is difficult to choose. We will quote two, one being small and rather elementary, viz.:

Knebusch, Theod., "Die allgemeine und specielle Rezeptirkunde." 8vo, Stuttgart, 1879, mark 1.60. And the other being the most complete we are acquainted with, and of the greatest use both to the physician and the pharmacist:

Bernatzik, W., "Handbuch der allgemeinen und speciellen Arzneiverordnungslehre." Vol. I. Rezeptirkunde. (With illustrations). 8vo Wien, 2d edition, about 12 marks.)

No. 1,476.—Artificial Fruit-Essences (K. S.).

Here are the desired formulæ:

1. Strawberry.

	Parts.
Ethyl butyrate.....	5
" acetate.....	5
" formate.....	1
Methyl salicylate.....	1
Amyl acetate.....	3
butyrate.....	2
Ethyl nitrate.....	1
Alcohol.....	100



The Doctor and the Professor met in the woods, where the former was evidently gunning, and the latter, seeing a red deer bounding off in the distance, cried: "There! there he goes! Why don't you fire?" "Oh, no!" said the Doctor. "He is like my single patient. I get all my practice out of him. It would never do to kill him."—*Fliegende Blätter*.

Mix and distil from a glass-retort or flask, into which about $\frac{1}{4}$ part of calcined magnesia has been introduced. The first 10 and the last 10 portions should be received separately, and the intermediate portion should be rectified from fresh strawberries in a copper still, after having been in contact with them for 24 hours. When nearly all has passed over, the reserved portions may be added and also rectified. They yield an inferior product.

2. Raspberry.

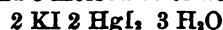
	Parts.
Ethyl formate.....	1
" butyrate.....	1
" benzoate.....	1
" acetate.....	1
" cennanthate.....	1
" sebacate.....	1
Methyl salicylate.....	1
Amyl acetate.....	1
butyrate.....	1
Saturated alcoholic solutions of	
Tartaric acid.....	5
Succinic acid.....	1
Alcohol.....	100

Mix well, and rectify from a glass-retort or flask containing about $\frac{1}{4}$ part of calcined magnesia. The first 10 and last 10 parts are set aside, and the middle portion is rectified in a copper still from fresh raspberries, having allowed the latter to remain in contact with the liquid for 24 hours. The reserved portions may then be rectified in the same way, but they do not yield so agreeable a product.

No. 1,477.—Iodohydrargyrate of Potassium (M.).

The true iodohydrargyrate is a salt

containing one molecule of iodide of potassium, 2 molecules of mercuric iodide, and 3 molecules of water.



This may be prepared by adding to a concentrated boiling solution of 2 mol. of iodide of potassium, 3 mol. of the mercuric iodide. On cooling, long yellow prisms of the before-mentioned salt crystallize out. When heated, the crystals at first give off water, and afterwards melt to a red liquid. The salt is soluble in alcohol and ether. When treated in water, one-half of the mercuric iodide separates, and on evaporating the solution a salt is left which consists of 2 KI HgI₂; dilute acids separate the mercuric iodide from the crystals.

No. 1,478.—Bretonneau's Pills (Dr. S.).

These are tonic pills containing iron, quinine, stomachics, and gentle laxatives. The formula is:

	Gm.	Gr.
B Ferri Reducti.....	8.0	120
Quinina Sulphatis.....	0.5	8
Zingiberis.....	0.5	8
Extr. Cinchonæ.....	1.5	24
Ext. Rhei [comp.].....	1.5	24
Aloes.....	0.25	4

M. Make 50 pills. One to four per day.

No. 1,479.—Restoring Rancid Olive Oil (Selma).

The following process is suggested by Hager:

Shake the oil thoroughly with 1 per cent of chloride of sodium, 1 per cent of water, and $\frac{1}{4}$ per cent of calcined magnesia, previously mixed together. Then allow to settle, decant after one week, and filter the turbid residue. The mixture should be in a well closed vessel, and be kept in the dark during settling. If the rancid odor has not disappeared after this treatment, add 2 per cent, by volume, of absolute alcohol, shake thoroughly, let stand 24 hours, then heat on a water bath until the alcohol is evaporated, and filter. If the rancid odor still remains, the case is most likely a hopeless one. The alcohol forms, with the rancid constituents of the oil, certain compounds allied to fruit-ethers, which have an agreeable odor and are either dissipated when the oil boils or remains behind, owing to their high boiling point.

W. E. H., of Michigan. Please to send us your name as well as your initials and we will be able to reply to yours of March 7th.

Formulæ Asked For.

1. Kennedy's Salt Rheum Ointment.
2. Williams' Indian Pile Ointment.
3. Blair's Rheumatic Pills.
4. Elleman's Embrocation for Man and Beast (made in England).
5. Crossman's Specific Mixture.
6. Barrell's Indian Liniment.
7. Hamlin's Wizard Oil.

Lactate of Quinine.—Vigier (*Gaz. Hebdom.*) says that this is preferable to any other salt for hypodermic use owing to its solubility and neutral character. He recommends, for this purpose, a solution of fifteen grains in six drachms of glycerin and twenty drachms of water, of which about seventy-five minims should be injected three or four times daily.

Iron Alum (Sulphate of Iron and ammonium), given in powder and combined with opium, is said by Dr. E. T. Williams to be a good remedy for diarrhoea attended with ulceration. Children of one year may take a grain of the alum and one-twelfth of a grain of powdered opium for a dose.—*Boston Med. and Surg. Jour.*

American Druggist

Vol. XIV. No. 5.

NEW YORK, MAY, 1885.

Whole No. 131.

[ORIGINAL COMMUNICATION.]

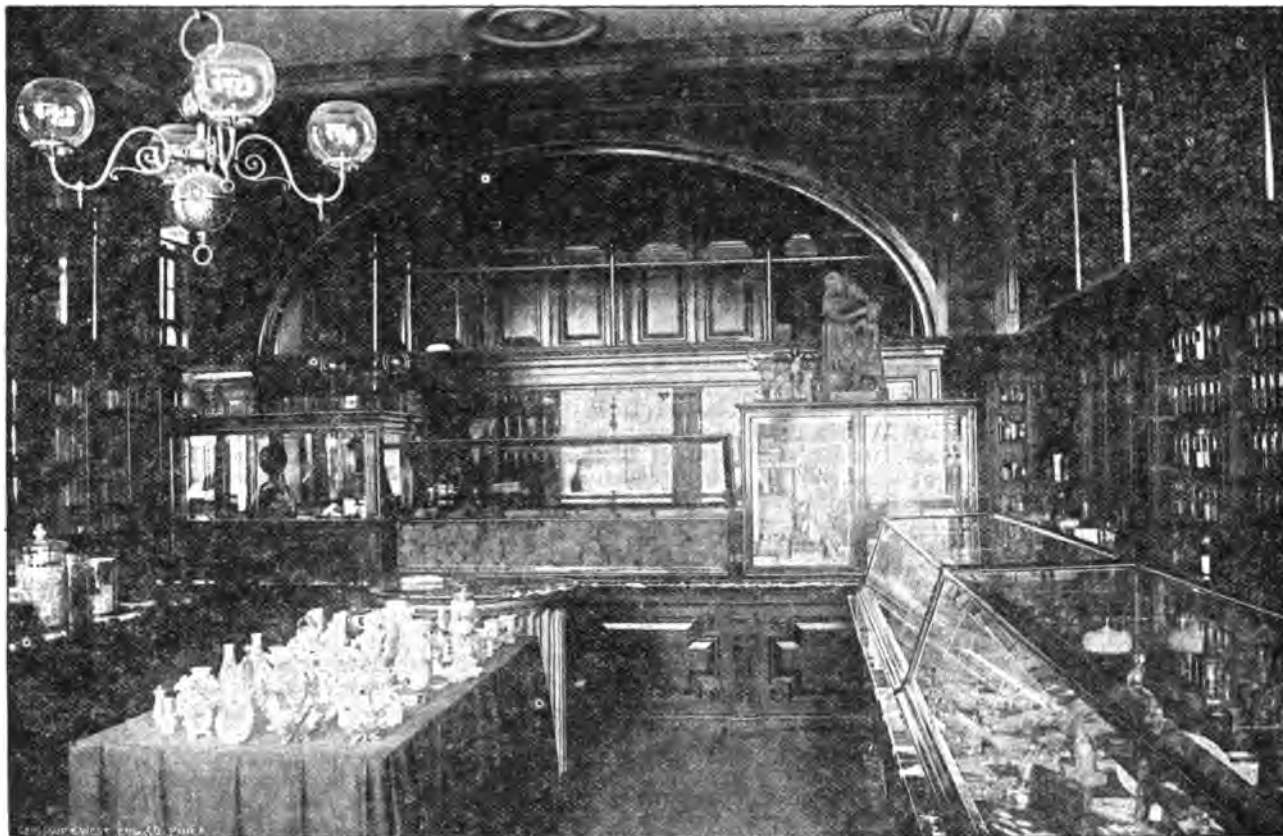
THE ARCHITECTURE AND ARRANGEMENT OF DRUG-STORES.



THE following notes in regard to the store illustrated in this number will serve as a slight coloring to the artist's light and shade, probably not increasing the artistic effect, but bringing the different features of the store into slightly greater prominence. Situated on the corner of two thoroughfares; with an outlook relieved by green in summer and white in winter; in a building which attracts no little attention even in that portion of Boston noted for fine architecture; sepa-

vaseline, etc., all placed without regular order, but with artistic effect, on cardinal plush. The wide and rather heavy door is opened with a bronze knob of cantiloupe shape. Upon entering, the harmonious colors (the general tone of which is red with a tinge of brown), the broad lines of gallery and arch, the large amount of deeply bevelled glass, the neat carving, the beautifully figured counter tops, the graceful gas-fixtures and chandelier, combine to produce an appearance of unusual richness and solidity. The wood, with the exception of show-case frames, is a selected Western cherry, finished with shellac. The floor is covered with dark, terra-cotta tiles relieved by slightly different shades. At the base of the counters is a narrow line of American black marble, while on the top is a rare African marble, whose pure white and black form a marked and pleasing contrast which attracts much attention. The extra counter in front of the prescription counter gives an opportunity to place the cashier's desk in a convenient location, besides desirable show-case and drawer room, and prevents the near approach of the public to the prescription counter; while the large glass allows weighing and general movements of the dispensers to be seen, and gives to those behind the counter an unobstructed view of the front store without the slightest suggestion of peeking.

The show-cases were made by Hughes, of Boston, of a mahogany not too dark to match the cherry, and one can scarcely imagine finer workmanship than is exhibited by them. The bevel of an inch and a half given to the glass, together with the silk plush in the cases, seem to impart



rated from the noise and dust of the street by wide sidewalks; without large stores near it to outshine it by superior attractiveness, its location is fortunate.

Over the front and side are the signs just fitting the spaces allotted by the architects of the building; the body of them covered with a dull, lemon gold-leaf, contrasting well with the dark copper-color of the raised, distinct, although somewhat peculiar letters, and matching the dull antique brass of the gas and other fixtures. Each side of the entrance, which is on Boylston street, are plate glass windows extending nearly to the sidewalk. In them are bevelled plate-glass show-cases, provided with castors, allowing cases and contents to be easily moved when windows need cleaning—a point many busy men will appreciate.* The cases protect the choicest goods from injury, and as a matter of interest connected with this series of papers, the articles used to decorate one of the windows at this time may be mentioned. A few solid silver and cut glass vinaigrettes, just sufficient in number and variety to suggest a fuller assortment inside; several toilet bottles, odd in shapes, color, or cutting; a bronze Japanese tray, several decorated ointment pots, suitable for cold cream,

an extra quality even to the goods which are shown in them. The sponge case, just in front of the prescription counter, is a way of showing sponges which is very satisfactory, as they are protected from dust and are presented to the purchaser in a much more desirable condition than when exposed in baskets. The top of the case raises from the front like a lid, and when open is supported by brass elbows at the ends. Inside partitions of plate-glass divide the case into three portions, so as to separate different varieties of sponges. The tall case on the right of the sponges is used for toilet soaps, and has a heavy glass shelf, increasing its capacity, but which scarcely shows in the engraving; swinging doors opening from the front expose the contents to the customer.

Low cases, similar to the one on the left next the counter scales, are used for nail and tooth brushes; the tooth brush case being divided by polished mahogany partitions into twenty-one spaces about four by seven inches each. The tops of the cases hinge on one side, and are supported, when open, by brass elbows. The gas fixtures do not show to advantage in the illustration on account of the photograph having been taken in summer while they were covered with gauze. They may be briefly described as follows:

* See initial letter in June number.

Curved arms spring from between two brass balls, the lower and larger mottled something like alligator skin—the upper ball of cantiloupe shape—just above the latter, a ring holds all in suspension by being caught by a hook, the shank of which extends to the ceiling. The gallery is supported by angle irons secured to the wall and by T irons which are supported on the pilasters of the lower section. The hard pine floor, which runs from face of gallery to the wall, is screwed to the T and angle irons. The gallery is panelled with cherry and the face has a four-inch moulded nosing. The closets above the gallery are not as deep as those below, thereby giving sufficient space for passage, without causing the gallery to project too far into the room. A neat brass rail, of the same dull antique finish as the gas and door fixtures, is a convenience and prevents a dangerous appearance. The arch springs from each end of the prescription counter, and was originally designed to cover a projection in the upper corner of the room, but became one of the principal decorative features; just below the centre a handsome bronze clock, in the form of a vase, has recently been placed. The prescription counter, which is under and back of the arch, is of more than usual width. It has a desk at each end, and next to each desk is a Becker scale, one for fine and the other for coarse weighing. A long row of mortars, out of the way but in easy reach, extend from scale to scale. Over the mortars, and even with the lower edge of the large glass front, is a shelf for about fifty graduates—both mortars and graduates are placed upside down to avoid dust. Under the shelf a polished brass pipe provided with five nipples and stopcocks furnish gas for Bunsen burners. Steam is introduced at one end of the counter, and may be used when more desirable than gas. The space under the counter has been carefully divided into drawers and closets for empty bottles, pots, boxes, utensils, etc., so as to bring the things in greatest demand in convenient reach. The arrangements for pasting are different from usual, and warrant a word of notice. Tinned copper paste holders are set in butter-nut boards which slide into the counters above the waste-paper drawers. The labels are placed directly on the boards, and the paste applied becomes so absorbent, after being washed and scraped several times a week, that a dry space on which to place a label may easily be found, even when business is brisk. The paste-brush is laid in a little trough cut in the board. The prescription counter is lighted from the front, and a window on the Berkely street side. In front of the window is the desk used for copying prescriptions and writing labels; on the left is the closet for prescription books; on the right is the closet for coated pills, which are alphabetically arranged in tin boxes open at the top and which slide in on the shelves. The front of the boxes are lettered with the kind and makers of the pills contained in them, while for convenience in examining the labels on the bottles, the sides of the boxes are only half as high.

(To be continued.)

Fresenius' Laboratory.—The laboratory of Dr. Fresenius, at Wiesbaden, during the recent winter session has been attended by 89 students, of whom 67 were Germans, 7 English, 5 Austrian, 3 American, 2 French, 2 Russian, 1 Swiss, 1 Luxemburg, and 1 Swede.

The Solubility of Camphor in water is increased by mixing tincture of myrrh with the spirit of camphor in the proportion of half a drachm to an ounce.

[ORIGINAL COMMUNICATION.]

WINDOW DECORATION.

BY F. B. KILMER, OF NEW BRUNSWICK, N. J.

EDITOR OF THE AMERICAN DRUGGIST:—Your sketches are full of interest and suggestions that are of great value in arranging and decorating druggists' windows and entrances, and yet if all were to pattern after them in detail there would be a sameness that would be far from pleasing. Their greatest value to me has been awakening of ideas, making one wonder that he never thought of that before. Some of your articles and illustrations might not be used without more expenditure than the ordinary pharmacist would care to afford, unless fitting up a new store. Still there are many points the most humble could utilize in a form modified to suit his surroundings.

It has always been a perplexing study to know what to put in the windows to fill them up; as much so, I imagine, as the "devil's" cry for "copy" in the Editor's sanctum. Many goods are greatly damaged by the exposure to light, dust, etc., especially if windows are not inclosed. I have often stopped in passing the elaborate city stores, and tried to borrow some new idea upon the subject. Sometimes I get it, at other times I do not, for there is very often a remarkable duplication of "Beef, Iron and Wine, 47c. a bottle," tired toilet soap, backed by patent medicines in faded wrappers, relieved only by "chest protectors," "insect powder," and "camphor gum" in appropriate seasons.

Your papers suggested to me a plan that is now in my window, and which can be varied to an almost unlimited extent with means at hand in any store, and the objects used can be in no way damaged. I simply placed in my window a map of the Western Hemisphere, with straight lines drawn to points, from which well-known drugs are received, at the end of each line placing a number which refer to a list placed below the map giving the name of drugs obtained from that point. Then I placed around in no particular order, specimens of roots, herbs, etc., as well as a few pharmaceutical preparations of my own manufacture made from these drugs, also pictures of plants, etc.

The map was patterned after one in *NEW REMEDIES* for October, 1878, adapted to such drugs as I happened to have a good specimen or picture of, and omitting any not of interest to the public.

The window never before had such an interest to passers-by, and I have heretofore spent considerable money, and many hours of labor, with but little effect comparatively.

We can also add to or take from our display without detracting. The plan is capable of almost endless changes by taking the different hemispheres, or selecting one country and exhibiting its products, or even localizing by taking one's State, and show its materia medica as far as possible by specimens and pictures. I found some odd numbers of Bentley and Trimen's "Medicinal Plants" that nicely aided in illustrating my map.

This map would be a good adjunct in utilizing your suggestion as to using cinchona bark and its alkaloids—the map to be shaded, to show sections from which the bark is derived. I find that one may fill a window full of the finest sponges, and the public will hardly bestow a glance at them, but if you put even a few coarse ones in and attach a card on them stating the coast, etc., on which they are found, and draw a line on the map pointing to the spot, they become a great curiosity. The same interest will be attached to the most ordinary root, bark,

or herb. As I suggested, I think your ideas may be still farther adapted by conducting the practical operations of pharmacy in the window, such as percolation, filtration, distillation, etc. A friend of mine conducts all such on a marble-top counter in his store in full view of his customers, having for the purpose a very handsome array of porcelain and Bohemian glass apparatus. I have noticed in holiday times that the metropolitan fancy goods stores attract crowds by showing moving figures impelled by clock-work or other motive power.

Can we not steal the thunder of these arch cutters, by having something that has motion in our windows. A few neatly arranged percolators, funnels, etc., with practical work going on, will secure an audience at all times, who will gaze in wonder at seeing the menstrua enter the percolator clear and colorless, and come out in the receiving jar laden with color. And if one should put a glass retort in actual operation over a gas-stove, which could be easily arranged, he would probably have to secure the service of the police to keep the crowd away.

Of course, in such displays as this neatness will be of utmost importance. Fine apparatus is not necessary; old ones cleaned and polished will answer every purpose. Retort stands and other iron ware can be painted and vanished, or easily decorated with the familiar bronze paints. I might also suggest that in many of our pharmaceutical journals occur illustrations that would make good window shows.

For instance, in *NEW REMEDIES* for November, 1879, is a picture of an ancient "apothecary." The quaint utensils, seeds, reptiles, bunches of herbs, etc., that abound in the picture could easily be found or imitated, and "ye ancient shop" would make an attractive window picture. This could be followed by a display of the utensils (coated pills, elixirs and emulsions) that characterize modern pharmacy. In the February No., 1880, is a picture of cork gathering that could be enlarged by one handy with a pencil, and form an adjunct to a display of corks. I believe attention to these matters is more pleasant and profitable than selling "patents" at cost, as it will greatly add to one's reputation, which must eventually increase the weight of his purse.

The Care of Kerosene Lamps.

SIR FREDERICK ABEL, in a lecture before the Royal Institution, gave the following suggestions for lessening, if not removing, the risk of accident which attends the use of petroleum and paraffin oil:

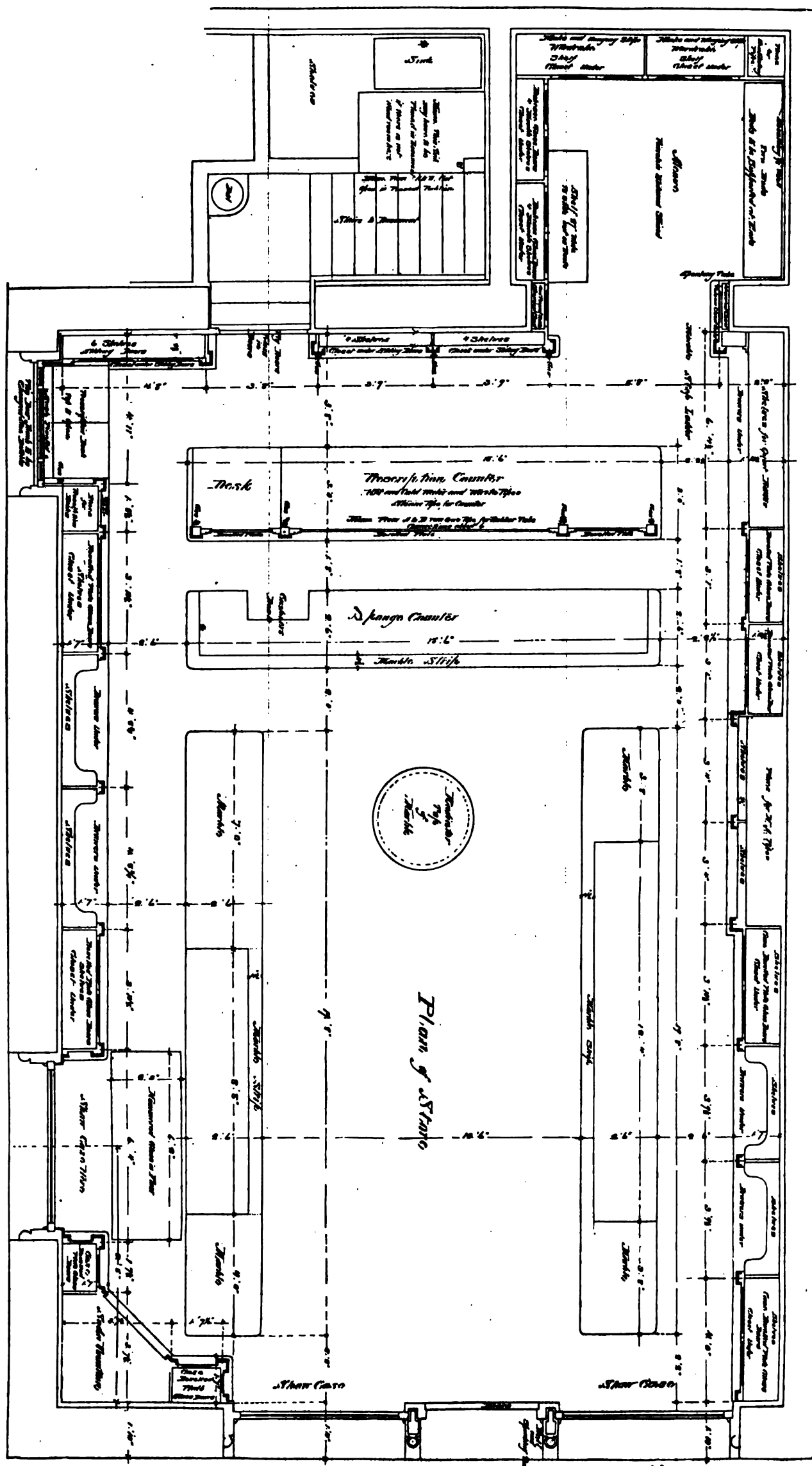
1. The reservoir of the lamp should be of metal, and should have no opening or feeding place in the metal.

2. The wick used should be soft and loosely plaited; it should fill the wick holder, but not so as to be compressed within the latter, and it should always be thoroughly dried before the fire when required for use. The fresh wick should be but little longer than is required to reach to the bottom of the reservoir, and should never be immersed to a less depth than about one-third the total depth of the reservoir.

3. The reservoir of the lamp should always be almost filled before use.

4. If it is desired to lower the flame of the lamp for a time, this should be carefully done, so as not to lower it beneath the metal work more than is absolutely necessary.

5. When the lamp is to be extinguished, and is not provided with an extinguishing apparatus, the flame should be lowered until there is only a flicker; the mouth should then be brought to a level with the top of the chimney, and a sharp puff of breath should be projected across the opening.



Plan of Kelly & Durkee's Store.

[ORIGINAL COMMUNICATION.]

ESTIMATION OF HYDRASTINE IN
COMMERCIAL POWDERED
HYDRASTIS.*

BY W. SIMONSON, PH.G.

Two fluid ounces of each tincture, representing sixty grains of hydrastis, were evaporated to one-fourth fluid ounce, one-half fluid ounce of water added, and the mixture evaporated nearly to dryness to remove all alcohol. The residue was mixed with two fluid ounces of water, and the mixture allowed to stand until the resinous matters had completely precipitated; it was then filtered, and the insoluble portion and filter exhausted with water. To the filtrate and washings was added a slight excess of ammonia; the

Sixty Parts of Powdered Hydrastis.

Specimen No.	Yielded of hydrastine in parts.	Equalling per cent hydrastine.	Yielded of berberine hydrochlorate in parts.	Equalling per cent berberine hydrochlorate.
1	.095	.158	1.84	2.23
2	.129	.215	1.855	2.23
3	.101	.168	1.26	2.10
4	.081	.135	1.25	2.08
5	.095	.158	1.25	2.08
6	.068	.118	1.28	2.05
7	.081	.135	1.21	2.02
8	.094	.156	1.19	1.98
9	.073	.12	1.19	1.98
10	.073	.12	1.13	1.96
11	....	....	1.16	1.93
12	.091	.151	1.15	1.91
13	.044	.073	1.12	1.86
14	.076	.126	1.12	1.86
15	.084	.14	1.10	1.83
16	.066	.11	1.10	1.83
17	.099	.165	1.10	1.83
18	.028	.046	1.08	1.80
19	.054	.09	1.08	1.80
20	.054	.09	1.08	1.80
21	.067	.111	1.08	1.80
22	....	....	1.08	1.80
23	.044	.073	1.05	1.75
24	.069	.115	1.04	1.73
25	.089	.145	1.04	1.73
26	.040	.066	1.01	1.68
27	.096	.163	.98	1.63
28	.070	.116	.97	1.61
29	.084	.136	.97	1.61
30	.111	.185	.97	1.61
31	.091	.151	.94	1.56
32	.063	.105	.94	1.56
33	.055	.091	.91	1.51
34	.088	.146	.90	1.50
35	.068	.116	.85	1.41
36	.032	.053	.83	1.38
37	.106	.18	.83	1.38
38	.128	.213	.79	1.31
39	.106	.176	.70	1.16
40	.129	.215	.70	1.16
41	.053	.088	.62	1.03
42	.063	.105	.61	1.01
43	.101	.168	.57	.95
44	.044	.073	.54	.90
45	.068	.116	.55	.88
46	.028	.046	.51	.81
47	.087	.145	.54	.84
48	.051	.085	.51	.81
49	.048	.08	.505	.84
50	.143	.238	....	.... ‡

mixture was allowed to stand for twenty-four hours for separation of impure hydrastine which formed a light-brown precipitate. This was collected on a filter, and washed with water until the washings passed tasteless and colorless. The filters and contents were next dried at 125° Fah., and weighed. Each filter was then returned to its funnel and washed, first with dilute hydrochloric acid, and then with water. The acid filtrate was a nearly colorless or very pale yellowish solution of hydrastine hydrochlorate, most

of the impurities precipitated with the alkaloid by ammonia having remained on the filter. The filters were then dried at 125° Fah., and weighed. The latter weights, subtracted from the former, gave the quantity of hydrastine contained in each sample. In order to compare the yields of hydrastine and berberine, the results of Mr. Soule's berberine estimations are reproduced as the last two columns of the preceding table.

This table is arranged in accordance with the proportion of berberine, commencing with the largest yield, and it corresponds with the table on pp. 146 and 147 of *Drugs and Medicines of North America*.

Remarks.—Specimen number 50 was powdered from select clean rhizomes freed from rootlets, and it will be noticed that this furnished the largest yield of hydrastine.

The average yield of hydrastine for the entire number of specimens is .125 per cent. For the first seven (those containing at least 2 per cent of berberine), it is .143 per cent. The latter quantity is nearly identical with that obtained from a standard specimen of fresh hydrastis, which yielded .140 per cent. A close inspection of the table will show, however, that there is no fixed relation between the yield of hydrastine and that of berberine. Thus, in number 7, the quantity of berberine was forty times that of hydrastine, while in number 47 it was less than three times that of hydrastine. These proportions are corroborated by the relative yields of the two alkaloids obtained on the manufacturing scale, some lots of hydrastis being nearly worthless as regards berberine, but containing a correspondingly increased amount of hydrastine.*

Although, at present, the percentage of berberine is to be accepted in judging the quality of the drug, it may become necessary to determine also the quantity of hydrastine present, if, as appears to have been proven by the physiological investigations of Prof. Bartholow, Sattler, and others, hydrastine, and not berberine, is the peculiar active constituent of hydrastis.

HARRISON, Ohio.

[ORIGINAL ABSTRACT AND TRANSLATION.]

Assay of Pepsin-Preparations.

THE effect of pepsin depends, as is well known, on its power to dissolve albuminoids in presence of hydrochloric acid. In making an assay of several dry pepsins of the market, therefore, I caused them to act, under identical circumstances, upon equal quantities of albumen-nitrogen,† then determined the albumen-nitrogen unacted upon, and from these data calculated the activity of the pepsin. In the experiments I used egg-albumen, which had been dried at + 40° and had then been finely powdered. It was found, on trial, to be completely soluble in a sufficient quantity of pepsin solution prepared from the fresh stomach of the hog, and was found, as the result of several coinciding analyses, to contain 12.45% of nitrogen.

The different samples of pepsin were dissolved by pouring $\frac{1}{2}$ liter of water on 5 grammes of each, in a liter-flask, warming for half an hour to 40° C., then filling up to the liter mark, and finally filtering.

Two Gm. of dry albumen was then placed into a beaker, 100 C.c. of the pepsin solution added, together with 2 C.c. of hydrochloric acid containing 10% of HCl, and the mixture heated during 6 hours on a water-bath at a

constant temperature of exactly 40° C. During the heating, 1 C.c. of the above acid was added every half-hour, until 10 C.c. had been altogether added. The contents of the beaker were now washed into a flask of the capacity of 200 C.c., quickly cooled, and made up with water to the mark. The liquid was passed through a folded filter, and 25 C.c. of it evaporated to dryness upon previously washed and ignited sand in a capsule made of tin-foil. The capsule and contents were then cut up, mixed with a little oxalic acid, and the nitrogen determined in the usual manner by soda-lime. Since the pepsin preparations themselves contain a little nitrogen, this was separately determined in each sample, and the amount found deducted from the total quantity. The following table contains the mean analytical results:

Number of the sample.	albumine jo				
	a. Gm.	b. Gm.	c. Gm.	d. Gm.	e. %
1. "M."	0.00915	0.249	0.06463	0.11106	22.3
2. "S."	0.00705	0.249	0.14660	0.27910	56.0
3. "W."	0.00635	0.249	0.14445	0.27940	55.4
4. M.	0.00990	0.249	0.03867	0.05784	11.5
5. F.	0.00710	0.249	0.18502	0.25584	51.3

(See explanation of columns below.)

Explanation of columns :

a. 100 C.c. of the pepsin solution contains the stated quantity of nitrogen.

b. 2 Gm. of the egg-albumen employed contains ... nitrogen.

c. After the action of the pepsin upon the albumen, the 200 C.c. of liquid contain nitrogen.

d. Deducting the pepsin-nitrogen (in a), there remains ... nitrogen.

e. The pepsin dissolves per cent of the albumen.

f. 1 Gm., each, of the pepsins dissolved albumen corresponding to nitrogen.

g. Assuming that pure, dry albumen contains, on an average, 16% of nitrogen, the amount of nitrogen given under f corresponds to albumen.

All the samples examined were from reputable makers, No. 1 and 2 being from the same firm. Nos. 2, 3, 4, and 5 were examined immediately after receipt; No. 2 had been in my possession for about two years.

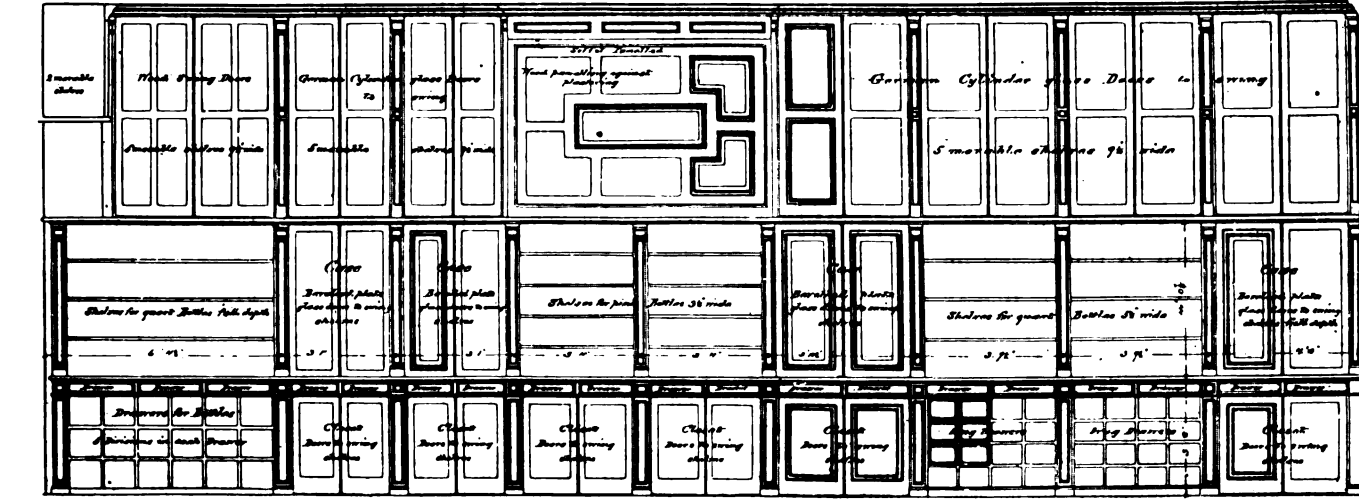
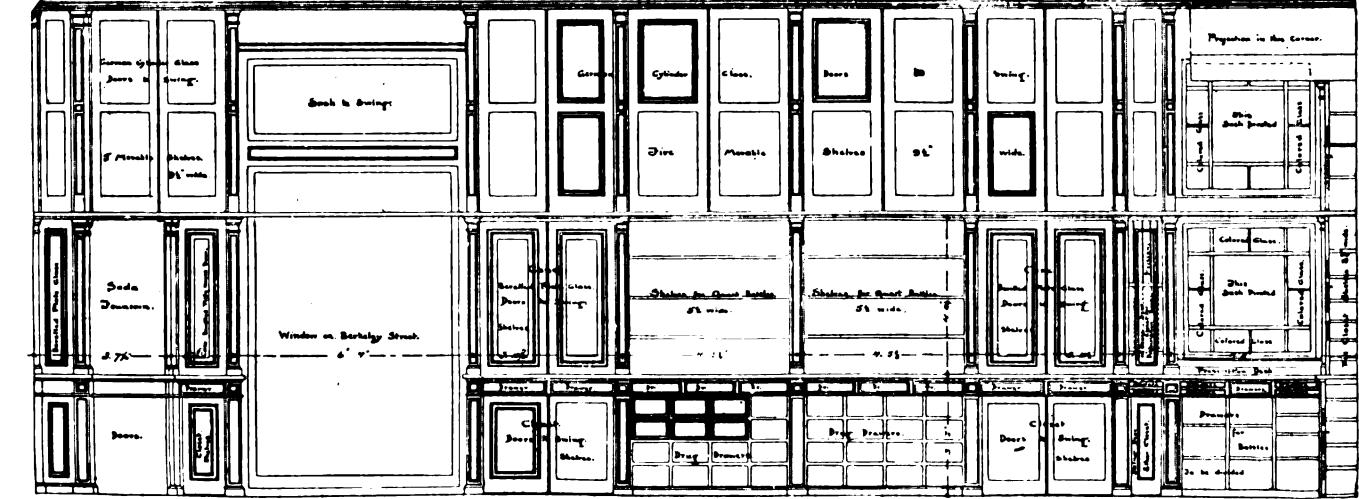
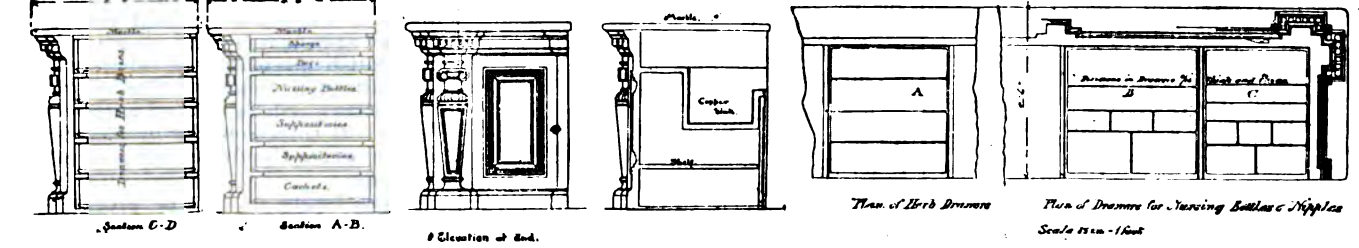
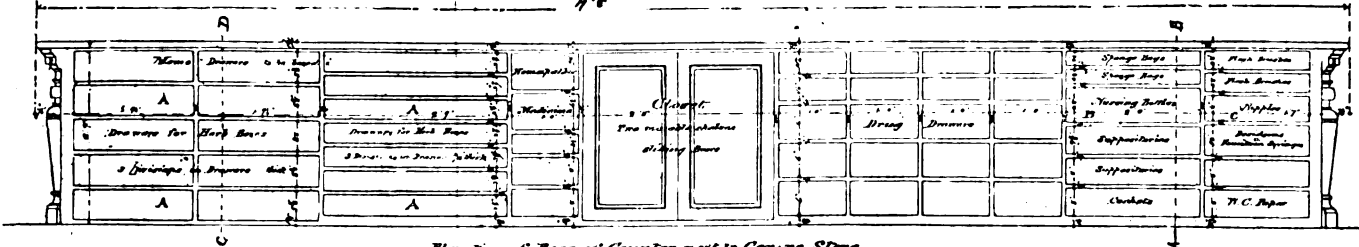
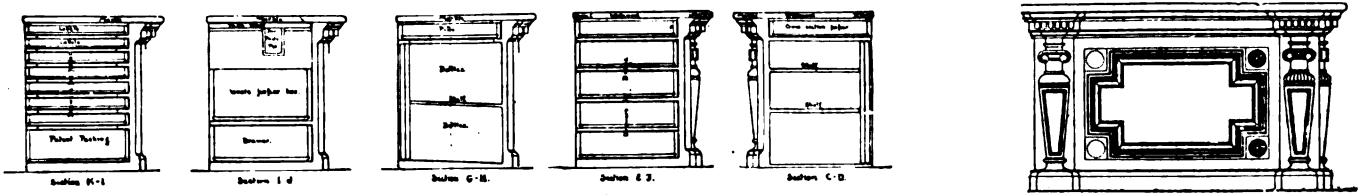
Looked at from a medical standpoint, it seems proper to demand from the makers that they shall furnish a pepsin, one gramme of which, in a dry condition, shall be able to dissolve at least 0.25 Gm. of albumen-nitrogen, or 1.56 Gm. of pure, dry albumen, containing 16% of nitrogen [corresponding to about 13 Gm. of fresh albumen]. — *From Report. d. Anal. Chem.*, 1885, 89.

[Note by Ed. A. D.—The requirements made by Dr. Stutzer are much below the possibilities and actual facts. We would recommend to his attention some of the powerful digestive preparations obtainable in the American market for comparison with those reported on in the above paper.]

* This forms a part of a series of investigations on Hydrastis canadensis conducted in the laboratory of Prof. J. U. Lloyd, and according to his direction. The tinctures operated on were prepared by Mr. Leslie Soule in estimating the berberine in samples of commercial powdered hydrastis, the results of whose investigation appeared in No. 5 of *Drugs and Medicines of North America*, page 146.
† Hydrastine not estimated.
‡ Berberine not estimated.

* See "Drugs and Medicines of North America," pp. 137 and 138.

† That is, upon quantities of albumen containing equal amounts of nitrogen, as ascertained by analysis. This appears to be the only exact method of arriving at correct figures. Though the assay of pepsin has often been treated of in this journal and elsewhere, we have nevertheless deemed the above paper by the well-known authority, Dr. Stutzer, to be of general interest and importance.



Details of counters, cases, and shelves in Kelly & Durkee's Store.

NOTES ON PRACTICAL PHARMACY.*

(Continued from page 67.)

RESIN EMULSIONS.

THESE are prepared from Venice turpentine, resin of guaiac, of jalap, and similar others. As compared with the oil emulsions, resin emulsions are but spurious emulsions.

Venice turpentine can be easily emulsified with viscid mucilaginous substances and also with yolk of egg by trituration in a mortar. For 20 Gm. it is customary to take the same amount of gum arabic, or two yolks.

Guaiac resin, finely powdered, is mixed in the mortar with half the amount of gum arabic, and under continued trituration and gradual addition of small quantities of water united with the latter. Such an emulsion is more or less bluish in color, according to its concentration, but the color gradually changes within a short time, and finally becomes greenish. In order to bring out the bluish color of the emulsion more quickly, many dispensers add a few drops of *Spiritus Aetheris*, which, however, is of but little use if it is free from acid. But as no medicinal action is exerted by the blue color, its production in receptology is only the plaything of the pedant. If time permits, the emulsion, slightly diluted with water, is exposed to the air, and the bluish color results without the admixture of any other medicinal substance.

Jalap resin is usually pounded with a few decorticated sweet almonds (two decorticated almonds for 0.5 Gm. of resin) into a light uniform dough, which is carefully thinned with very cold water or syrup. The resin, however, soon separates even from this emulsion. If no yolk of eggs or almonds are employed as emulgent, but sugar or gum arabic instead, it is advantageous to add to the mixture about 2 Gm. of alcohol to a small quantity of resin—e. g., to 2 Gm. of jalap resin—and after these are rubbed together, to incorporate some water quickly with trituration.

There are bodies which are not resins, but resemble them in their external qualities and their relations towards water, for instance, chinoidine, some other amorphous alkaloids, tannate of quinine, "quininum dulcificatum" (quinine combined with glycyrrhizin), extract of cubeb, oleoresin of male fern, etc. These substances require similar treatment as jalap resin for their suspension in water, so that they can be easily shaken up after they have been deposited. They are mixed by trituration in the mixture mortar with 3 or 4 times the amount of sugar and enough alcohol to form a thin electuary. Then the water is added with trituration. If the addition of alcohol be omitted, they form in the mixture, when at rest, a sediment which sometimes cannot be incorporated even by vigorous shaking. The addition of an equal quantity of gum arabic and the same amount of water aids in the formation of an emulsion. The above-mentioned extracts might even be mixed with five times the amount of gum arabic in order to insure their emulsification.

[Tincture of soapbark (*Quillaia*) has been recommended by the Société de Pharmacie de Paris, and other authorities, as an emulsifying agent. It may be prepared by digesting 1 part of soap bark, in coarse powder, with 5 parts of diluted alcohol.]

* The basis of this series of papers is the latest edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany, and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

There is, however, this objection to quillaia, that it is by no means an inert, purely emulgent substance. Its emulsifying property mainly depends upon the presence of saponin, which is quite an energetic principle, and though but little tincture of soap-bark may be required to form an emulsion, yet its use, without the express order of the physician, should not be permitted.

Mr. Joseph Ince says in *Chem. and Drug. Dairy*:

Milk makes a good emulsion with scammony, but resin of jalap will not mix with milk, while it will readily combine with almond emulsion.

Mr. Constantin (in 1854) advocated what may be called the *ignition process* for emulsifying gums and gum resins. This consists in taking a weighed quantity of *gum resin*, placing it in a mortar, and adding about four times its weight of alcohol. The alcohol is ignited, and the whole is triturated until all the alcohol is burned away. The gum resin thereby becomes a soft extract. The liquid is then added in small quantities at a time, and a perfectly homogeneous emulsion is the result.

Resins must be converted into gum-resins for this process by the addition of twice its weight of powdered gum arabic.

This method is expensive, but quite successful. The peculiar taste and odor of the drugs remain unaltered. On this process, compare NEW REM., 1876, 107.]

EMULSIONS WITH ETHERIAL OILS

do not keep long. The ethereal oil, for instance, *Oleum Terebinthinae*, is either united with a thin mucilage in a bottle by vigorous agitation, or if the prescription calls for gum arabic which is to be formed into a thick mucilage with water, or for yolk of egg, it is added thereto in a mortar gradually by agitation, and intimately mixed with it. If the quantity of the emulgent is not prescribed, take ten times as much gum as the ethereal oil, or one yolk for 5 to 10 Gm. of oil.

CAMPHOR EMULSIONS.

Camphor in aqueous mixtures, or in such in which it is not completely or not at all soluble, is emulsified. If the physician has not prescribed the quantity of the emulgent, take of gum arabic ten times the amount of camphor, but only one yolk of egg for 0.2 to 5.0 Gm. of camphor. If the emulgent is left to the choice of the dispenser, gum arabic is always used. The camphor is moistened in the mixture mortar with a few drops of absolute alcohol, and rubbed to an exceedingly fine powder; this is mixed with the powdered gum arabic and emulsified by the gradual addition of small quantities of water or syrup by agitation. The powdered camphor which is kept in stock cannot be used for this purpose without further preparation, because it has lost its finely pulverulent form in the keeping.

[The simplest and quickest way of preparing *Emulsion of Oil of Turpentine* and emulsions of essential oils in general is the following (from the N. Y. and B. Formulary):

Oil of Turpentine..... 2 fl. dch.
Acacia, in fine powder. 30 grains.
Syrup..... 1 fl. oz.
Cinnamon Water, to
make..... 2 fl. oz.

Pour the oil into a 2 ounce bottle and, having corked it, agitate it so that the inside of the bottle may be completely wetted with the oil. Then add the acacia, and shake again. Finally add the syrup and enough cinnamon water to make 2 fl. oz., and mix thoroughly.

This emulsion will not remain long homogeneous; but, as it may be re-

stored to its normal condition at any time by shaking, and as it keeps long enough, each time, to permit a dose being withdrawn and administered, this drawback is but slight.

In the same manner may be prepared emulsions with other volatile liquids, even such as *Ether* and *Chloroform*.

Mr. R. Rother some years ago published a paper in the *Pharmacist*, in which he laid stress upon the fact that a perfect emulsion is itself an efficient emulsifying agent, capable of taking up more of the oil, and that its power of emulsifying stopped only when the water present sank below a certain proportion. If this deficiency of water, however, is occasionally replaced, the emulsion regains its power of further emulsifying. Basing upon these facts, he gave the following process for

Emulsion of Oil of Turpentine.

Two fluidrachms of [fresh and cold-prepared] mucilage of acacia are placed into a broad, conveniently-sized mortar, and diluted with 1 fl. drachm of water. Half a fluidrachm of oil of turpentine is now added, and the whole triturated a few moments until the oil is emulsified. 1½ fl. drachms of oil are next added in ¼ drachm portions, emulsifying each before adding the next. This is followed by 1 fluidrachm of water. Five fl. drachms of the oil are now introduced in the same manner as before, and again followed by ½ fl. oz. of water. After this, 3 fl. oz. of oil are again incorporated as before, and still the emulsion will retain its perfect appearance, and ever ready to extinguish quantities of oil, almost to an unlimited extent. The emulsion may afterwards be diluted with water.

General Directions for an Emulsion. Rother gives the following general directions:

Into a broad mortar of proper size introduce the emulsifying agent, which may be either already a perfect emulsion, or the yolk of egg (entirely free from albumen), but if it is gum, this must be in the form of mucilage, either thick or thin, according to the nature of the oil. Now pour on a small quantity of oil, and triturate this with the mucilage until a perfect emulsion has formed; then add the rest of the oil in small portions at a time, but not until the previous addition has been perfectly emulsified, adding small quantities of water at intervals, as the indications may require. Finally, when all the oil has been incorporated, gradually add the prescribed volume of diluent. When both a fixed and a volatile oil are prescribed in an emulsion, the fixed oil must be emulsified first before the addition of the other.]

1. R Camphoræ ..	0.5 Gm.	8 gr.
Acaciæ	q. s.	q. s.
Aq. destillatæ	100.0 "	ab. 3½ fl. oz.
Aq. Aurantii		
florum,		7 fl. oz.
Syr. Althææ sã	25.0 "	5 fl. oz.
Fiat emulsio.		
2. R Camphoræ ..	0.5 Gm.	8 gr.
Aq. destillatæ	90.0 "	8 fl. oz.
Mucilag. Acaciæ	15.0 "	½ fl. oz.
Aq. Aurantii		
florum,		7 fl. oz.
Syr. Althææ sã	25.0 "	5 fl. oz.
M. D. S., etc.		

The two prescriptions are alike. 0.5 Gm. of camphor are rubbed fine with a few drops of absolute alcohol, mixed with 5 Gm. [75 grs.] of gum arabic, emulsified readily with Syrupus Althææ, and diluted with water.

If the camphor is one of the constituents of an oil or balsam emulsion, it is rubbed very fine with absolute alcohol in a mixture mortar, mixed by trituration with the oil or balsam, then the gum and finally the necessary quantity of water, and emulsified according to the third method above given.

PHOSPHORUS EMULSIONS.

Owing to the powerful action of the phosphorus, this is a very important remedy in the preparation of which the greatest care should be taken. Some pharmacists recommend to melt the phosphorus in hot mucilage of acacia and then unite it therewith into an emulsion; but they lose sight of the fact that the small particles of the melted phosphorus (as in the case of wax) cohere during cooling in spite of the agitation with the pestle, form larger particles, and thus become dangerous. A phosphorus emulsion for internal use prepared in this manner must not be dispensed by the pharmacist, despite the direction of the physician. In all cases the phosphorus, dried with blotting paper, is completely dissolved in one hundred times the amount of almond or poppy-seed oil in a test tube which is repeatedly dipped into hot water; then the phosphorated cold oil is emulsified with gum and water *secundum artem*. Usually the prescription directs a similar mode of preparation.

R Phosphori.....	0.03 Gm.	½ gr.
Olei Amygdalæ express	q. s.	q. s.
Mucilag. Aca- ciæ	q. s.	q. s.
Emulsionis Am- ygdalæ (from 5.0)	60.0 Gm.	ab. 2 fl. oz.
Liq. Ammon. anisati	0.5 "	8 min.

D. S. Teaspoonful every quarter or half hour.

The phosphorus is dissolved in 3 Gm. of almond oil (in a test-tube), the solution emulsified with 1.5 Gm. [24 gr.] of gum arabic and 2.25 Gm. (36 to 40 drops) of water, the emulsion taken up with the almond emulsion, etc.

A mixture in which float only two or three granules one-fourth the size of a pin's head may cause a fatal gastritis. Hence caution is necessary.

[As it is impossible to judge by the eye of the presence or absence of any solid particles of phosphorus, it is preferable to discountenance the prescribing and dispensing of phosphorus emulsions altogether, and to adopt in their place the *elixir of phosphorus* of the N. Y. and B. Formulary, the formula for which we published in our last volume, p. 128.]

WAX, CACAO BUTTER, AND SPERMACE TI EMULSIONS.

[These articles are so seldom prescribed at the present day in the form of emulsions that it is not worth while wasting space upon them. The only one which is still sometimes called for (more in England than here) is emulsion of spermaceti, which is best made with the aid of yolk of egg, thus:

R Spermaceti.....	2 drachms.
Yolk of Egg.....	1
Syrup.....	2 fl. oz.
Water.....	1½ fl. oz.

Break down the spermaceti; make it quite smooth with the syrup. Then triturate the yolk of egg, in a mortar, by a rapid circular motion, until it is smooth, gradually add the spermaceti mixture, and finally the water.]

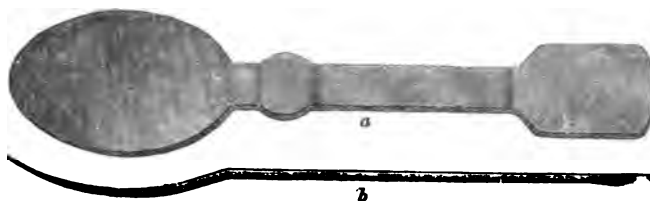
FRESH PLANT JUICES.

Fresh plant juices, expressed juices, *succi herbarum recentes s. expressi*, are usually secured by means of the press, in the spring of the year, from recently collected plants such as: *Nepeta Glechoma* (ground ivy), *Fumaria officinalis* (fumitory), *Taraxacum officinale* (dandelion), *Menyanthes trifoliata* (fringe buckbean), *Achillea Millefolium* (yarrow), *Tussilago Farfara* (coltsfoot), *Chelidonium majus* (greatcelandine), *Anthriscus sylvestris* (wild chervil), *Anthriscus Cerefolium* (garden chervil), *Nasturtium officinale*

(water cress), etc. In Germany the name of "Maisaft" (May-juice) is generally applied to the mixed juices from equal quantities of the herbs *Taraxacum officinale*, *Achillea Millefolium* and *Nepeta Glechoma*. For this purpose each herb is separately washed with water, if necessary cut small, crushed to a pulp in a (stone) mortar by the aid of a wooden pestle, and then expressed through a linen strainer. It is not permissible to add water in order to facilitate the expression. The freshly expressed juice is heated on the water bath to 90° C. so as to coagulate the albuminous substances, then set at rest for ten hours, when it is decanted and strained. It must not be kept for more than three days, as it is liable to spoil soon. The juice which is to be preserved for three days is filled into bottles in such a way that the tapering cork with which the bottle is stoppered displaces a part of the fluid so that the bottle is completely filled and no air bubble remains behind. Although the addition of ten per cent of glycerin will make the juice keep a few days longer, this admixture, though innocent, should not be made without the consent of the physician. It is best to add to the juice 0.33 per cent of powdered borax and effect its solution by stirring. The taste is not altered thereby and the juice will keep five or six days in a closed bottle.



Powder Mortar.



a, Large powder spoon; b, its form in longitudinal section.

Clarification of the juice by boiling with albumen is done only when specially directed in the prescription.

POWDER MIXTURES.

A powder is either simple or compound. Either one is required to have the proper degree of fineness and dryness, and to contain the active constituents peculiar to the substance from which it is prepared. We distinguish three grades: fine, *pulvis subtilissimus s. tenuissimus s. alcoholisatus*; moderately fine, *pulvis subtilis*; and coarse powder, *pulvis grossus*. Powder for internal use by man must be very fine, with few exceptions. Among these exceptions are, for instance, cubebs, fennel seed, anise seed, zedoary, ergot, which should be moderately fine, but not dust-like. In order to change them into dust-like powders, they would have to undergo thorough drying, whereby their medicinal qualities would, of course, be injured. In veterinary practice, coarse powder must always be dispensed for the larger domestic animals.

A compound powder is prepared from several different powders, or from powders and small quantities of fluid substances, extracts, etc., by intermixture; and such a powder is to be considered perfectly and thoroughly mixed when the particles of its several constituents can be distinguished in it with difficulty by the unaided eye.

The composition and mixture of powders is on the whole one of the easiest labors of the dispenser, because the majority of the drugs ordered for this purpose are kept in stock in a finely powdered condition. The mixture is effected in a mortar whose walls have a shallow curvature and which has no spout; it is called a powder mortar. It should be large enough to contain at least ten or fifteen times the quantity of the powder to be mixed. Its pestle should not be too small: the diameter of its thick end should be about one-fourth to one-third of the transverse diameter of the upper circumference of the powder mortar, and the rubbing surface of the pestle should be parallel to the internal, rather flat bottom of the mortar. The work of mixing is done alternately, partly by friction against the bottom mortar with circular motions of the pestle, partly by strokes across the centre of the mortar through the powder, with moderate pressure. Whether the pestle is to be more or less firmly pressed down depends on the nature of the substances to be mixed. Where pulverulent substances are to be mixed, the pestle need be held and directed only with the fingers. For the trituration of hard substances it is firmly grasped with the hand.

The order in which the several constituents of the powder are placed in the mortar is not fixed. It is good practice to mix the smaller quantities, which are usually the most active, first intimately with a part of the powder which is to be added in larger quantity, and when this has been done, to stir in the remainder. First weigh the powder ordered in larger quantity and which generally serves as excipient, spread a small part of it over the bottom of the mortar, put over this layer the substances ordered in smaller amounts, cover them with a little more of the excipient, and mix. Lastly add the remainder of the excipient. Powdered substances which are lumpy, or dry

bodies which have to be rubbed to powder, must be thoroughly triturated in the mortar, in order to lessen the labor of mixing, before the other powders are added; for the same reason white powders are first mixed with a small quantity of a colored powder, and a very heavy one with one which is specifically lighter in order to add to this mixture again the specifically still lighter substances. If the mixture of larger quantities of powder is difficult, especially the division of one or another constituent, the mixture is passed through a moderately fine hair sieve, in order to crush the remaining coarser particles again in the mortar by themselves and add them to the sifted powder.



Dispensing Sieve.

[In order to incorporate the constituents of a compound powder thoroughly, it is best to pass each single constituent through a sieve of the required degree of fineness (the same sieve serving for all). When the whole quantity of each constituent has thus passed through, they are mixed and passed through a slightly coarser sieve five or six times in succession, which causes a rapid, intimate, and uniform mixture of the whole.]

For the sifting of powder mixtures in dispensing there are in use small sieves—dispensing sieves—which consist of two metallic hoops, one of which is broad (a), the other narrow (c), the latter of which fits over the former and serves for stretching gauze (bolting cloth) between them. In this way very handy and cleanly sieves are obtained which can be cleansed and freed from odors by washing, and the gauze of which can be replaced at will with-

out trouble. Of these sieves two sizes are kept, of 7 Cm. [$2\frac{1}{4}$ inch.] and 10 or 11 Cm. (ab. 4 inch.) in diameter, respectively.

For removing the mixed powders from the mortar it is customary to use rather shallow spoons which are not pointed, but broadly rounded. Any powder adhering to the mortar by reason of the pressure of the pestle is scraped off with the anterior edge of the lower surface of the spoon, because the other side causes a screeching, disagreeable noise which should be avoided for the sake of propriety.

POWDER MIXTURES WITH ETHERIAL OILS.

The quantity of volatile oil is dropped upon a proportionate amount of the powder and mixed intimately therewith by trituration. Then the remainder of the powder is added.

The mixture of a volatile oil with sugar is called "oil-sugar," *elæosaccharum*, *ætheroleosaccharum*. If an oil-sugar is to be mixed with larger quantities of powder, the oil-sugar is first prepared and the remaining powder added, in small portions, by degrees. Were the several constituents of the powder put at once into the mortar one after the other, the mixing would require a much longer time and it would remain questionable whether the mixture was thorough enough.

An oil-sugar is prepared from 2 Gm. of sugar and 1 drop of the volatile oil, so that the proportion by weight is 50 parts of sugar to about 1 part of volatile oil. The above proportion of one drop of oil to 2 Gm. of sugar is prescribed by the German, Austrian, Danish, Swiss, Netherlands, and Swedish pharmacopœias (1 part by weight of oil to 50 parts by weight of sugar).

If the prescription calls for no more than 1 Gm. of oil-sugar, two grammes are prepared, and half of this quantity taken, because one-half drop of oil cannot be measured.

The most frequently ordered oil-sugars are: *Elæosaccharum Anisi*, *Aurantii florum*, *Citri* [*Limonis*], *Fœniculi*, *Macidis*, *Menthæ piperitæ*. Then there are a few oil-sugars whose preparation is altogether different.

Oil-sugar of fresh Lemon Peel (*Elæosaccharum Citri flavedinis*) and oil-sugar of fresh Orange Peel (*Elæosaccharum Aurantii flavedinis*) are thus prepared: The rind of a fresh lemon or orange is rubbed off with a piece of sugar until the latter has absorbed a sufficient amount of volatile oil. Then the oil-soaked part of the sugar is scraped off with a knife and rubbed to powder in a lukewarm mortar. In this way the yellow part (flavedo) of a lemon or orange can be taken up with 20 Gm. of sugar in pieces (the French pharmacopœia prescribes 10 Gm. of sugar).

By *Elæosaccharum Vanillæ* (oil-sugar of vanilla; vanilla sugar) some physicians mean the *Vanilla saccharata* which is prepared by rubbing up the pith of one part of vanilla with 10 parts of sugar in pieces, or 1 part of vanilla in small pieces with 9.5 parts of sugar in pieces, sifted through a small dispensing sieve.

It is not customary to keep oil-sugars in stock. This is done only when some kind of oil-sugar is largely and frequently called for, but the stock should not last longer than ten days. Despite careful preservation in well-closed vessels in a dark place, the taste changes quite noticeably in a few days.

Powder mixtures with oil-sugar are dispensed in glass vessels or wax paper. If the powder contains carbonate of or calcined magnesia, it may also be dispensed in boxes.

POWDER MIXTURES WITH TINCTURES OR FLUIDS WHICH DISSOLVE SUGAR.

Should the fluid to be added to a sugary powder contain a very volatile constituent, the mixture should be ef-

fected without regard to the fact that the product becomes moist. If the fluid is merely a vehicle for a but slightly volatile drug, it may be allowed to evaporate with care, if it be probable that the mixture would become too damp. For instance:

℞ Tinct. Opii croc. [Vini
Opii U. S.]..... gtt. 20
Sacchari albi..... 5.0 Gm.
M. f. pulv. Divide in part. æq. x.

Into a powder mortar which has been moderately warmed (by hot water poured in or by being placed on the steam apparatus) place a piece of sugar weighing about three or four grammes, drop upon it the tincture of opium, crush the sugar after a few minutes, and add the remainder of the sugar in the form of powder about five or ten minutes later. During this time enough fluid has evaporated to make the powder mixture appear dry. Nevertheless this powder is still dispensed in waxed paper.

POWDER MIXTURES WITH EXTRACTS,

especially with narcotic extracts, are very frequently called for, and it is for this reason that the German pharmacopœia contains directions for the preparation of pulverulent narcotic extracts. Two (2) parts of the official dry narcotic extract containing powdered licorice as vehicle correspond to one (1) part of the extract of pulpy consistence. The narcotic extracts of this class are: *Extractum Aconiti*, *Belladonnæ*, *Conii*, *Digitalis*, *Hyoscyami*, *Lactucæ virosæ*.

[The dry extracts of the German pharmacopœia, containing powdered licorice root as a diluent, are of no interest to American pharmacists. Of the official, dry extracts of the Ph. Germ., only the following are in use in this country:

Extractum Aloes.
" *Cinchonæ* (rarely used).
" *Colocythidis* (very rarely used).
" *Colocythidis Comp.*
" *Hæmatoxyli*.
" *Nucis Vomicae*.
" *Opii*.
" *Quassia* (rarely used).
" *Krameriæ*.
" *Rhei*.
" *Senegæ*.

The commercial powdered extracts are prepared from those of a pilular consistence (or from the original drug), by mixing with sugar of milk, and careful drying. By using the so-called abstracts of the U. S. Pharmacopœia which are just twice as strong as the crude drug itself, the physician may carefully adjust the dose of the preparation or mixture. Their admixture with other substances offers no special difficulty.]

Experience has shown that extracts mixed with licorice are very slightly hygroscopic and keep permanently dry in small, well-stoppered bottles in a dry place. The Austrian, Swiss, and Netherlands pharmacopœias prepare the dry narcotic extracts with milk sugar, the Danish pharmacopœia with licorice, the Russian pharmacopœia with dextrin.

It may happen that the physician prescribes a pulpy extract in a powder mixture, and that the corresponding dry extract is not in stock, while the powder mixture contains no substances which are capable of absorbing much moisture without losing their pulverulent form. In that event the extract is weighed, mixed in a glazed porcelain mortar which has been previously heated to 50° or 60° C. with an equal weight of milk sugar or powdered licorice root, the mixture spread over the bottom of the mortar by the aid of the pestle, and placed in a moderately warm place for from one-

quarter to one-half hour. With a round-pointed knife the mass is detached from the wall, the mortar is allowed to cool somewhat, and the mass triturated with pieces of sugar or with some one of the suitable constituents of the mixture to be prepared.

Among the extracts which have naturally a dry form belongs also *lactucarium*. This is with difficulty rubbed to powder, because it becomes electrical by friction and adheres firmly to the wall of the mortar and the pestle. Hence *lactucarium* must always be triturated with from two to four times the amount of sugar in pieces, or crystallized milk sugar, and whatever adheres close to the wall of the mortar must be detached with an extract knife.

As we have to expect that powder mixtures with dry extracts are liable to become moist, the divided powders are dispensed in paraffin paper. Undivided powder of this nature keeps better in pasteboard boxes than in glass vessels, in the warm season. Pasteboard boxes can be rendered indifferent to moisture by being coated on their inner surface with a melted mixture of nine parts of paraffin and one part of fluid paraffin.

POWDER MIXTURES WITH SALTS.

If salts which decompose each other are to be mixed in powder, they should not only be very dry, but finely powdered, and must be but lightly intermingled without pressure of the pestle; e. g., carbonate of potassium with dry sulphate of sodium, carbonate of potassium with chloride of ammonium, nitrate of potassium with salicylate of sodium.

Effervescent Powder.—The composition of effervescent powder is such that it is very liable to spoil, and this the more rapidly, if its components are not dry enough, or if it is preserved in imperfectly closed vessels. The powdered tartaric acid should be mixed with the sugar in a mortar previously made lukewarm by warm water, and when this is done, the finely powdered bicarbonate of sodium is lightly intermingled without any pressure of the pestle. It is not advisable to specially dry the components of effervescent powder to a temperature above 30° C. (86° F.), because the mixture afterward absorbs moisture from the air with extreme avidity.

In the warm season, effervescent powder is dispensed in paper or pasteboard boxes, and during the cold season in glass vessels.

The following table will serve for the extempore production of small quantities of effervescent powder (*Pulvis ærophorus*) of the German Pharmacopœia:

Effervesc. Powder.....	10.00	12.00	15.00	20.00	25.00
Bicarb. Sodium.....	2.63	3.16	3.95	5.26	6.58
Tartaric Acid.....	2.37	2.84	3.55	4.74	5.92
Sugar.....	5.00	6.00	7.50	10.00	12.05

Effervesc. Powder.....	30.00	35.00	40.00	45.00	50.00
Bicarb. Sodium.....	7.90	9.21	10.52	11.84	13.16
Tartaric Acid.....	7.10	8.29	9.48	10.66	11.84
Sugar.....	15.00	17.50	20.00	22.50	25.00

Effervesc. Powder. ...	60.00	80.00	90.00	100.00	120.00
Bicarb. Sodium.....	15.80	21.00	23.70	26.30	31.55
Tartaric Acid.....	14.20	19.00	21.30	23.70	28.44
Sugar.....	30.00	40.00	45.00	50.00	60.00

Seidlitz powder (*pulvis ærophorus laxans*), according to the direction of the German Pharmacopœia, is not generally kept in stock and always freshly prepared. [This requirement is hypercritical. We have never known Seidlitz mixture to deteriorate by keeping, unless it was exposed either to dampness or heat, or had otherwise been improperly protected.] The salts or alkaline bases are to be dispensed in colored paper, the tartaric acid in white paper.

MIXTURE OF POWDERS OF VARIOUS KINDS.

Camphor is moistened with a few drops of alcohol, rubbed to an extremely fine powder before being admixed, and then added to the remaining powder with the pestle, avoiding strong pressure, otherwise the powder adheres firmly both to the pestle and to the wall of the mortar.

A similar rule applies also to resins and bodies containing it, which manifest electrical attraction during friction, *e. g.*, Resina Guaiaci, Resina Jalapæ, Colophonium [rosin], Castoreum, Lactucarium, etc. These must have an appropriate degree of fineness, and are mixed with other powders without strong pressure of the pestle. Crystalline alkaloidal salts exhibit similar properties.

Sulphate of quinine, which is frequently dispensed in powders, likewise adheres to the walls from strong and continuous trituration, and thus causes loss to the patient. Like camphor, it must be mixed with the sugar or other constituent by gentle friction. Sulphurated antimony (antimonium sulphuratum) is usually triturated very energetically in order to bring out the color of the powder mixture; but the patient neither cares nor is it to his interest if, by reason of this pedantry, the amount of active constituents is curtailed. This preparation is so firmly rubbed into the pores of the mortar that the latter often can be cleansed only with caustic lyes and by scrubbing with sand. It is necessary that a sul-



Landolt's water-bath.

phurated antimony mixture should be good, but it should always be effected by gentle pressure during trituration. [In this country, this antimony preparation has completely fallen into disuse.]

Mixtures containing sulphurated antimony and calomel require that each of these substances should be mixed separately with a portion of the vehicle (sugar), and that the two mixtures be mingled by very light pressure. Inasmuch as the two substances decompose each other and form a poisonous body, too intimate mixture, and especially a moist vehicle must be avoided. To be dispensed in wax capsules.

Calomel and iodine. These two substances are mixed in a similar manner as the preceding. The vehicle is divided, and both calomel and iodine triturated separately, after which the two triturations are mixed. If calomel and iodine be mixed directly, the mixture contains at once an amount proportionate to the iodine of the two direct poisons—iodide of mercury and mercuric chloride. The effect of the powder is then also decidedly more violent or poisonous.

R Hydrargyri chloridi mitis...	Gm. 0.5	gr. 8
Iodi.....	0.05	3/4
Sacchari	10.0	150
M. f. pulv. Divide in 20 part. æq.		

Both calomel and iodine, each separately, are mixed with 5 Gm. of sugar, and the two mixtures lightly mingled.

Musk. This is not kept in stock in

powder, often it is not even dry enough. If triturated with powdered sugar, it is powdered with difficulty. Lumps of hard sugar should be used. For convenience there may be kept on the shelf with the musk a small stock of dry pieces of sugar, of course inclosed in a well-stoppered glass vessel or tin box. Musk powders are dispensed in paraffin paper.

When a pharmacist has found by experience that musk is occasionally prescribed by physicians for his customers, it is advisable to keep in stock Saccharated Musk (*Moschus cum Saccharo*). Musk, one part, is rubbed up with one and a half parts of milk sugar previously dried, passed through a sieve, the residue again rubbed to powder with one-half part of milk sugar and passed through the sieve. The powder, which is to be well mingled, is preserved in well-stoppered bottle and labelled: "*sumatur triplum*" [take three times the quantity ordered].

Musk in any form should be preserved in an appropriate tin box which should contain, besides a powder and a mixture mortar, each marked *Moschus*, also a small horn spoon, likewise marked *Moschus*, and at least six powder scoops for the division of powders. These appliances are used only for the dispensing of musk.

Carbonate of Magnesium and *Magnesia usta*, owing to their lightness, generally require a rather long time to cause them to mix in larger quantities with other colored powders. In order to facilitate the work, they are first intimately mixed with a small portion of a dark powder. This having been done, the mixture is placed on a smooth sheet of paper, then the other substances are mixed, and at last the magnesia mixture is added to the latter. Such powders, when pressed smooth, must not show any conspicuous white points.

(To be continued.)



WASHING FILTER PAPER.

U. KREUSSLER has devised a convenient arrangement for preparing washed filtering paper, such as is required for analytical purposes.

A flat vessel is filled with diluted hydrochloric acid, and the filtering paper, either in whole packages or sheet after sheet, is laid into it, so that half the paper hangs over the edge of the vessel. The acid is drawn over, by capillary attraction, into the outside portion of the paper, and drops from the lower edge. When the acid ceases to drop, distilled water is poured into the vessel, which will follow the same route as the acid, and gradually wash the paper until the washings cease to have an acid reaction. The arrangement is illustrated in the accompanying cut.—*Zeitsch. f. Anal. Chem.*, 1885, 81.

WATER-BATH AND HOT-FILTER COMBINED.

PROF. H. LANDOLT recommends the arrangement here illustrated. It is constructed of sheet copper, 38 cm. (15 inch) long and 25 cm. (10 inch) wide, the front portion being 9 cm. (3 1/4 inch) deep, and the rear portion 11 cm. (4 1/4 inch). The latter portion serves as water-bath, and contains several openings into which flasks, beakers, etc., may be placed, which rest upon a perforated plate elevated over the bottom of the box. The front portion has three copper-funnels soldered into it, which

are destined to hold glass-funnels for hot filtrations. The size of the apparatus here shown is such as will make it suitable for analytical work only. For operations on a larger scale, it will have to be considerably enlarged. The box stands upon four legs 20 cm. (8 inch) high, one of which is provided with a set-screw.—*Ber. d. Deutsch. Chem. Ges.*, 1885, 56.

APPARATUS FOR THE CONCENTRATION OF VERY DILUTED SOLUTIONS.

This apparatus, devised by Landolt, consists of a box made of sheet-copper and standing in an inclined position, upon three legs (see cut). This box forms the water-bath, and the level of the water may be preserved at a constant level by the attachment of the well-known arrangement at *a*, described by us in NEW REM. On top of the water-bath is placed a shallow box containing a number of transverse gutters, the end of each alternate gutter being soldered to the sides, while the others stand a short distance off.

For use, the water bath box is partly filled with water and heated, the steam escaping at *c*. From a reservoir standing at a convenient height over the box, the solution to be evaporated is now allowed to flow in drops (or very fine stream) upon the upper gutter *d*, from where the liquid will gradually traverse the gutters from side to side, losing water in its descent and becoming concentrated when it reaches the outlet at *b*. As the object of the ap-



Landolt's concentrating apparatus.

paratus is not to evaporate any solution to dryness, but merely to concentrate it, it is necessary to permit the dense liquid to gradually run off through the tube *b*. An apparatus, 38 cm. (15 inch) long, 20 cm. (8 inch) wide, and 10 cm. (4 inch) high, with about 850 square cm. (170 square inch.) of gutter-surface, evaporated 1 liter (nearly 34 fluid ounces) of water in one hour.—*Ber. d. Deutsch. Chem. Ges.*, 1885, 56.

Iodized Tannic Acid as a Reagent of Salts with Alkaline Reaction.

If alcoholic solutions of iodine and of tannin are mixed together in equal volumes, and if two drops of the mixture are added to 20 C.c. of spring water, a rose color is produced, which disappears again in a short time. Distilled water does not give this reaction. Further experiment showed that this reaction is occasioned by all alkalies and alkaline earths, and their carbonates, bicarbonates, borates, and phosphates—in short, by all salts which have a slight alkaline reaction. If 1 part of potassium carbonate is dissolved in 100,000 parts of water, 20 C.c. of the solution gave an intense rose color with 2 drops of the reagent. Even at a dilution of 1:1,000,000 the reaction was still manifest. Sulphates and chlorides do not give this reaction; but their presence in small quantities does not interfere. The rose color is distinguishable in dilute solutions only; in strong ones it is masked by a brown color.—*Dr. O. SCHWEISSINGER in Chem. News*, March 6th.

THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 5. WHOLE No. 131

FRED'K A. CASTLE, M.D., - EDITOR.
CHAS. RICE, Ph.D., ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

MAY, 1885.

SUBSCRIPTION PRICE per year, . . . \$1.00
SINGLE COPIES, 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

THE description of Messrs. Kelley & Durkee's store, which is commenced in this number, will be completed next month and is worthy of careful study by those who may have occasion to consider economy of space in arranging a pharmacy, as well as on account of the artistic features of the work. The arrangement of the drawers and compartments in the counters and prescription case is the result of much thought and experience. We are greatly indebted to the architects, Messrs. Sturgis and Brigham, for the loan of their working plans, and we have availed ourselves of them to illustrate many of the details of construction.

WE have received so many inquiries relating to the article on wire utensils, which we published in January, 1881, that we have thought it desirable to reproduce it on page 91, and to add illustrations of some other varieties of simple apparatus of the same general character. There is almost no limit to the variety of useful things which can be made of wire by one who possesses a little mechanical dexterity, and the models furnished by Mr. Hopkins' paper will supply material for practice.

WE ask especial attentive to what we have said on p. 92 about label-writing and will be glad, if a sufficient number of our readers desire it, to publish a paper on round-hand writing in greater detail.

THE calendar of meetings of a number of important medical societies on p. 100 has been obtained by correspondence, and will doubtless be of service to those who have goods for sale which may be of interest to physicians. The estimates of the number of persons in attendance are, we think, much below the average; in most cases many persons spending some time in the exhibitions who do not attend the meetings regularly.

Two serious mistakes in dispensing happened in the beginning of April, within a few days of each other, the first in Brooklyn, and the second one in New York City.

The facts in the Brooklyn case are briefly as follows: A prescription was presented late at night in one of the largest establishments in the city, which read as follows:

B Atropini sulfurici. 1.5 milligramms.
Aque. 30 gramma.
M. Use as directed.*

The person for whom the medicine was intended, was known to the dispenser as having frequently been ordered to take powerful alkaloids (such as aconitine, etc.), for neuralgia, and moreover, he had also on a previous occasion been supplied (as we are informed), with a solution of atropine for some affection of the eye. The clerk, on reading the prescription, probably thought that the mixture was to be used for a similar purpose, and in fact, there being no specific directions, he was, in our opinion, justified in coming to this conclusion. He thereupon weighed out 1 gramme and 5 milligramms of atropine sulphate, being misled by the very unusual manner in which the quantities were stated. The usual way to order one and a half milligramms of one ingredient, and thirty gramms of another, would be:

0.0015
30.0

the dispenser being accustomed to read the decimal fractions as grams and parts of grams. It is true that, 1.5 milligramms is correctly written as equivalent for $1\frac{1}{2}$ milligramms, and any one unfamiliar with drugs or dispensing, but familiar with decimal fractions, would have read it correctly. However, the dispenser made an additional blunder in reading the figure 5, immediately following the decimal sign, as milligramms after once having concluded that the 1 in front of the decimal sign denoted gramme. To be consistent, he should have read the figures 1 gramme and 5 decigramms. But in attempting to do this, he was probably confused by the word "milligrams," which the prescriber had added. At all events, he committed the error above mentioned. Being, however, in doubt whether he should dispense such a powerful preparation merely with a label reading "use as directed," he delivered the solution in a blue poison bottle, but omitted to label it "poison."

The prescriber had intended the patient to take the whole mixture—to contain one and one-half milligramms or about $\frac{1}{4}$ grain—at one dose. Instead of this, the patient took only a teaspoonful of the mixture as prepared—containing about three grains of sulphate of atropine—for a first dose. If

* On the continent of Europe, it is customary to write decimal fractions with a comma (,) instead of a period (.).

he had stopped here, and could have received early medical attendance, it is quite probable that he might have recovered. It may be mentioned here, incidentally, that cases are on record where recovery took place after quantities like the following had been taken: seven and one-half grains (Machia-velli, *Gaz. Med. Lomb.* 330, 1880); four to six grains; 2 grains, etc. (see Husemann's "Pflanzenstoffe," 2d ed. 1204). While, however, already under the influence of the drug, he took another dose, with fatal result.

These are the facts, so far as they are of general interest. It cannot be denied that the dispenser committed an error in misreading the prescription, and a further error in not labeling the mixture "poison." Whether he could have ascertained, either from the physician or from the customer, how the mixture was to be used, we cannot say. We should certainly have tried to ascertain. Yet, after all, the prescriber is much more to blame than the dispenser in this case; first, for using an unusual method of designating quantities, and second, for appending such indefinite directions, in the case of such a powerful drug. It is true that there is no law compelling the prescriber to append any directions whatever, and moreover, from the standpoint of the prescriber—who wanted only $\frac{1}{4}$ grain of the alkaloid dispensed, and that taken at one dose—directions might have appeared superfluous. But this case shows that no precaution should be omitted under any circumstances, and some chance should be given to the apothecary to assist the physician in guarding against error, by at least affording enough information to show how the medicine is to be used. The physician who does this will be clear of all blame before the public, should the apothecary after all commit an error, and the latter will have to bear all the blame himself.

The second case is one where, unfortunately, the apothecary appears to be the only one blame. A physician had ordered an anodyne cough mixture for a child, and while the prescription was being handed to the apothecary, the latter was drawn into conversation by another customer who had an order for Dover's powders. The latter drug was delivered to the person who expected a liquid mixture for the child, and, when the apothecary's attention was drawn to the apparent discrepancy, he was so far from suspecting that he was committing an error, that he even gave directions how to mix the Dover's powder with water "to render it liquid, when it would become a liquid medicine, such as the physician had ordered." The other customer received the cough mixture intended for the other person's child. About one or two hours later, the apothecary discovered his mistake, and rushed frantically to the residence of the child, stating that an error had been committed, and using all possible means, in conjunction with the physician to save the child. All efforts, however, were fruitless, and the child died shortly afterwards.

There is no excuse possible for a mistake of this kind. To hold conversation with customers while selling fancy goods or the ordinary articles of the drug trade is quite proper and one of the features incident to the transaction. But to converse with customers while preparing prescriptions is a most serious matter, and has caused many accidents. In a well-regulated dispensing establishment, no prescription should be taken in hand for preparation, until the person handing it over the counter has received a check or other device identifying both the prescription and himself as the person entitled to it. Had this precaution been observed in this case, the accident would not have occurred.

WIRE UTENSILS.

MR. GEO. M. HOPKINS describes the general construction of a variety of laboratory appliances which can often be made quite as effectual and more economical than those manufactured otherwise.

For most articles an unoxidizable wire should be selected, such as brass or tinned iron. Tinned iron wire is best for most of the utensils, as it possesses sufficient stiffness to spring well and at the same time is not so stiff as to prevent it being bent into almost any form. The tin coating, moreover, protects it from corrosion and gives it a good appearance. The necessary tools are flat and round-nosed pliers, a few cylindrical mandrels of wood or metal of different sizes, and a small bench-vice.

Fig. 1, a cork-puller, is old and well-known, but none the less useful for removing corks that have been pushed into a bottle, or for holding a cloth or sponge for cleaning tubes, flasks, etc.

Fig. 2 is a pair of hinged tongs, useful for handling coals or a piece of pumice-stone for blow-pipe work.

engaging the loop *b*, so as to hold the pinch-cock open.

Fig. 8 shows a spring-clamp for holding work to be soldered or cemented. It may also be used as a pinch-cock.

Fig. 9 shows a set of aluminium grain-weights in common use, from 1 to 5 grains, each straight side representing a grain.

Fig. 10 shows a pair of spring tongs, the extent to which they can be separated by the spring of the handle being

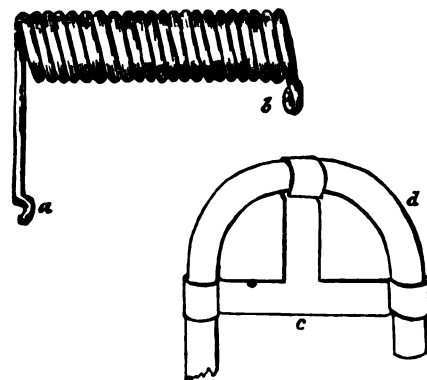


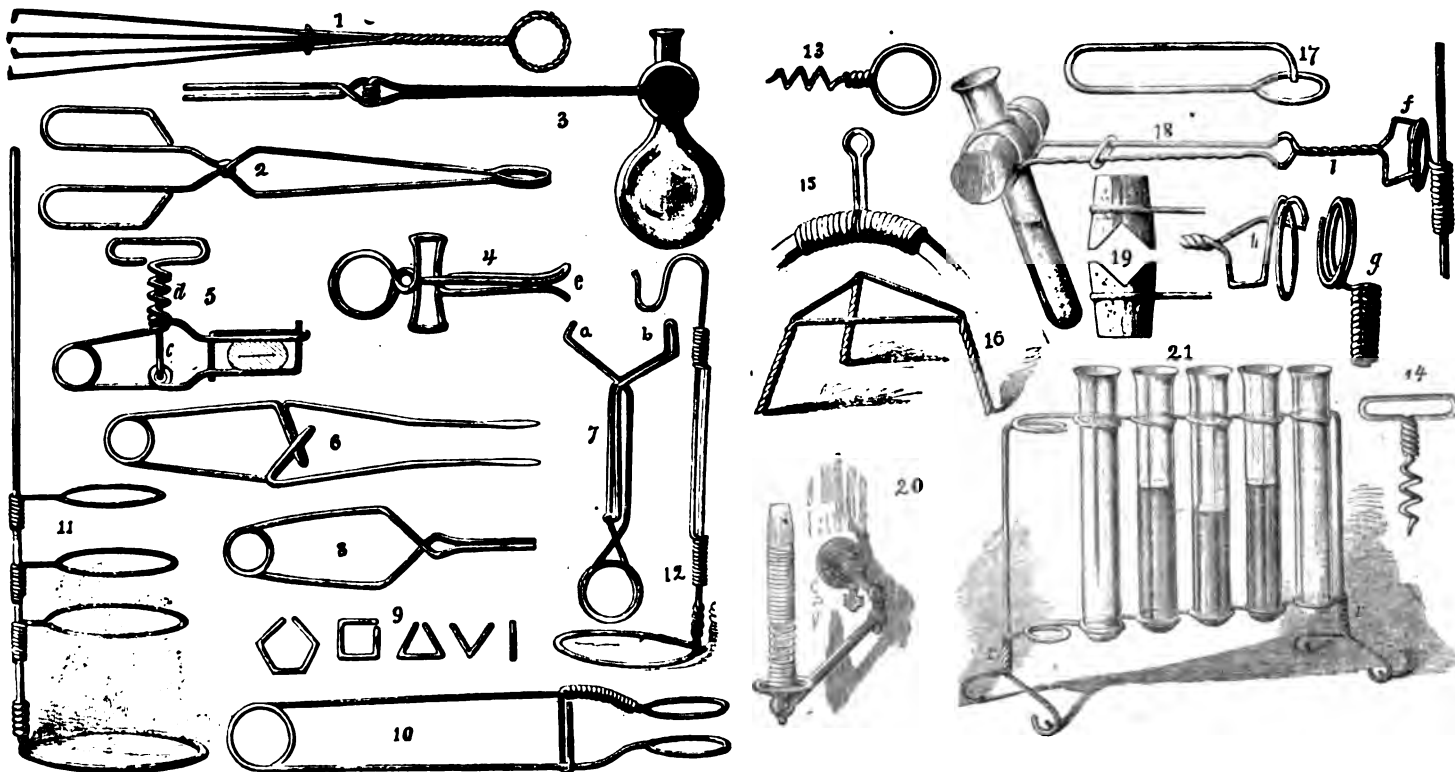
Fig. 15 represents a support for flexible tubes. After the loop has been formed, the ends should be bent in opposite directions.

Fig. 16 is a tripod stand made by twisting three wires together and suitable for holding a vessel like an evaporating-dish, or sand-bath, or the charcoal used in blow-pipe work.

Fig. 17 is a clamp for holding articles to be cemented or soldered, as when cover-glasses are cemented to microscope-slides.

Fig. 18 is a test-tube holder adapted for the standard shown in Fig. 11, and capable of being turned on a peculiar joint so as to place the tube at any desired angle. The holder consists of a pair of spring-tongs having eyes for receiving the notched corks, as shown in Fig. 19. One arm of the tongs is corrugated to retain the clamping-ring in any position along the length of the tongs. The joint consists of two spirals, *g* and *h*, the spiral *h* being larger than the spiral *g*, and screwed over it, as shown in Fig. 18.

Fig. 20 shows a Bunsen-burner formed of a common burner, having a wire tube, wound in a spiral, and drawn



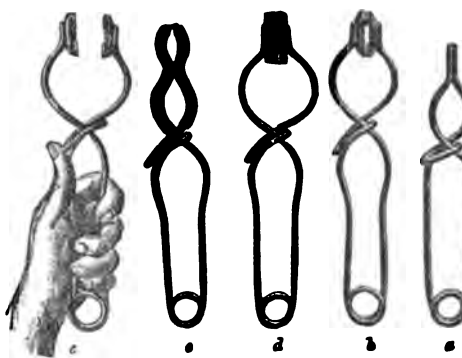
When provided with notched corks, as shown in Figs. 3 and 19, is also useful for holding large test-tubes and flasks. They are made by first winding the wire of one half around the wire of the other half, to form the joint, then bending each part at right angles, forming upon one end of each half a handle and upon the other a ring. By changing the form of the ring ends, the tongs can be used for handling crucibles, cupels, etc.

Fig. 4 is a form of pinch-cock provided with thumb-pieces which are pressed in order to open the jaws.

Fig. 5 shows a clamp or pinch-cock, having a wire *c* hooked into an eye in one side, and extending through an eye formed in the other side. This wire is bent at right angles at its outer end to engage in a spiral, *d*, placed on it and acting as a screw. The open spiral is readily formed by wrapping two parallel wires on the same mandrel, and then unscrewing one from the other, the handle being afterwards formed with the aid of pliers.

Fig. 6 represents a pair of tweezers, which should be made of good spring wire flattened at the ends.

Fig. 7 is a pinch-cock for rubber tubing; its normal position is closed, as shown, but the end *a* is capable of



Muencke's crucible tongs.

limited by the hook attached near the rings.

Fig. 11 is a stand. Should the friction of the spirals on the standard ever become so slight as to permit the rings to slip down, the spirals may be bent laterally, so as spring tightly against the standard.

Fig. 12 is a standard adjustable as to its height, for supporting the beak of a retort, or for holding glass tubes in an inclined position.

Fig. 13 and 14 represent some of the little corkscrews now made by the millions and found almost everywhere.

apart near the top of the burner, to admit air, which mingles with the gas before its combustion at the top of the spiral.

Fig. 21 is a test-tube rack formed of two wires which are twisted together at *r* to form legs.—*New Remedies*, 1881, from *Sci. Amer.*

Another simple appliance not embraced in the above, which is very useful when a rubber tube is attached to a gas burner and it is desirable to prevent the tube forming a sharp angle at its connection with the burner, is a coil of wire shown in the upper figure. One end of the coil ends in an eye, *b*, the other in a straight wire terminating in a short hook, the coil is slipped over one end of the rubber tube, which is then placed on the burner, the coil is then bent so that the hook *a* can be attached to the eye *b*, and the coil is then slipped along the tube until stopped by the burner. No amount of traction can then cause an angular bend to form at that point.

Another contrivance often used to accomplish the same purpose and which requires even less mechanical skill is the one made by cutting a

piece of metal—an old tomato can will answer—into a shape shown in the next figure (c), and binding the ends of the three branches so as to hold the rubber tube *d* in the manner shown.

CRUCIBLE TONGS.

TONGS for holding crucibles, dishes, and other laboratory objects are usually made in the old-fashioned way, requiring an effort of squeezing or compression to retain a hold of the object. Dr. Robert Muencke, of Berlin, now makes a series of various-sized tongs, made of stout brass-wire, which require pressure to release the object grasped by them. Their shape is adapted to the various utensils which they are intended to hold. Any one, who is at all handy in ordinary mechanical work, will be able to construct such tongs for his own use. *a* is a plain pair intended to hold small dishes, crucibles, or other simple objects; *e* has doubly curved jaws, which may be covered with rubber-tubing for holding test-tubes, flasks, etc.; *b, c*, have cheeks covered with cork for holding larger flasks or objects. Another form is *d*, where cork is replaced by rubber plates.—After *Chemiker Zeitung*.

Beef, Water, and Peptone Gelatin.

As a medium for cultivating species of bacteria, Dr. Koch uses the following mixture:

250 parts of finely chopped, lean beef are covered, in a glass vessel, with 500 parts of distilled water and set aside in a cold place (ice-box or cellar) during 24 hours. The mixture is then strained through a fourfold layer of gauze or muslin (thoroughly cleansed), and the latter slightly pressed, so that the strained liquid may amount to 400 parts. To this are added 40 parts of pure gelatin, 4 parts of pure, white meat-peptone, and 2 parts of common salt, and the whole heated at a temperature of 40° C. (104° F.) until all is dissolved. Next a concentrated solution of carbonate of sodium is slowly and cautiously added until the liquid has a faintly alkaline reaction. It is now heated in a glass flask closed with a pellet of pure cotton, in a water-bath, until all the albumin has been precipitated. When this has been ascertained by tests, the liquid is filtered through a steam-funnel into glass vessels or test-tubes, which had previously been deprived of all live organic matter by heating to 130° C. (266° F.) and had been kept closed with a plug of cotton. Sometimes it happens that the filtrate has again acquired an acid reaction. In this case, it must be again rendered faintly alkaline by soda.—E. GILLANY in *Zeitsch. Oesterr. Ap. V.*

Concentrated Solution of Iodide of Iron.

S. PLEVANI prepares a concentrated solution of ferrous iodide as follows:

Twenty Gms. of iodine and 10 Gm. of iron filings are made to react upon each other, in the usual manner, in presence of 30 Gm. of water, and the green solution of the ferrous iodide is filtered into a capsule containing 75 Gm. of glycerin. The capsule is weighed with its contents, and the latter evaporated until the contents amount to 100 parts.

This concentrated solution of ferrous iodide in glycerin is a clear, bright-green liquid, remaining unaltered for a long time, though in daily use. As it is miscible with water, alcohol, and even to a certain extent with fatty oils, the most various pharmaceutical preparations may be made from it.—ROSDICH in *Pharm. Zeit.*

LABEL WRITING.

THE writing of labels is one of the details of drug-store work which is of minor importance, but, like the dish-washing of the household, is inevitable. Moreover, like many other things of seeming triviality, it really is worthy of very much attention, for however skilful a dispenser may be in his treatment of the contents of a package, the hand-writing on the label is the principal feature of which the non-professional buyer is capable of judging, and the comparison of a badly-written with a neatly-written label is pretty certain to impress him in favor of the dispenser who achieved the latter.

There is no style of writing which is so likely to adapt itself to the requirements of this work, and is so capable of fair results in the hands of even an indifferent penman as that known as the "round-hand." For many years this has been taught to pupils in German and French schools, and most German pharmacists are able to write it with some degree of elegance. For a long time it has been employed on the labels of Lubin's perfumes, and in this connection is quite familiar to all our readers.

Within a few years so many persons in this country have been attracted by its beauty and legibility that it has become quite popular here also, and several type-founders have produced



Levis' metallic splint.

it in all sizes and varieties for press work.

When written with a pen, it is necessary to use one with moderately stiff nibs,* and blunt, instead of pointed, and in writing, the pen is held so that instead of being at right angles with the line of writing, the pen-handle slopes towards the right. When the direction given to the pen is from the left upper corner to the right lower corner of the sheet or reverse, it forms a line as broad as the nibs; when the direction is from the right upper corner towards the left lower corner of the sheet, or reverse, the line is as thin as the thickness of the nibs. For large lettering, such as may be needed for marking packages, show-cards, etc., a pen is not necessary, a chisel-shaped stick being quite sufficient, and by cutting a notch in the edge having nibs of different breadth, the broad lines can be made double and shaded. When it is desired to render the double line letters still more ornamental, the space between these double lines can be filled in with colored ink, in oblique lines, with an ordinary pen.

A B C D E F G H I J K
L M N O P Q R S T U
V W X Y Z
a b c d e f g h i j k l m n
o p q r s t u v w x y z

We append some specimens of the form of the letters which, though done with type, are precisely like those which can be rapidly executed with a proper pen. Copy-books and pens are now to be had at nearly all

* The best pens for this purpose are those manufactured by F. Soenneken of Bonn, the originators of the "Round Writing." Nos. 4 (coarse), and 5 (medium), will probably answer most purposes.

stationers, and it may be worth the expense and time for drug clerks to become expert in this form of writing. It certainly must increase their chances of remunerative employment.

METALLIC SPLINTS.

WE have lately received from J. Elwood Lee, of Conshohocken, Pa., a manufacturer of surgical goods, a very handsome specimen of the metallic splint, devised by Dr. R. J. Levis, of Philadelphia, which has many commendable features. Although primarily intended for fractures of the radius, it is equally servicable as a support for the fore-arm, wrist, and hand in other cases of fracture or sprain, either to put the wrist at rest or to receive the pressure of a sling and prevent interference with the circulation of the limb. In its present modified form, it is made of nickel-plated copper, in two sizes, suitable for adults or children, and is perforated so as to render it lighter without impairing its rigidity. Any apothecary who is located in the neighborhood of a popular roller-skating rink, or a hill which is apt to be slippery in winter, may find a supply of these splints to be an active article in his stock.

Separation of Metals Precipitated by Hydrochloric Acid Lead, Silver, Mercury).

ALTHOUGH we do not expect the methods generally given for "qualitative separation" to possess a great degree of accuracy, still we look upon them as being capable of giving us some idea of the relative amounts of the ingredients in a mixture, or at any rate of indicating the presence of more than traces of a substance. It may not generally be known that the method which is almost invariably given for the separation of silver from mercurous salts by the action of ammonia on their chlorides does not even fulfil the requirements of a qualitative separation; if the mercurous chloride predominates largely, scarcely a trace of silver chloride can be extracted by means of ammonia, and in any case the mercury compound always retains a large quantity of silver, as the result of the following simple experiment proves:

A mixture containing 1.183 Gm. crystals of mercurous nitrate and 0.330 Gm. silver nitrate was treated with cold hydrochloric acid. The precipitated chlorides, after being washed with boiling water, were treated for some time with cold dilute ammonia solution, then with stronger ammonia (0.96 sp. gr.); the residue was finally digested with warm ammonia.

After concentrating the ammoniacal filtrates only 0.021 Gm. of chloride of silver was obtained therefrom. The residue insoluble in ammonia gave on treatment with aqua regia 0.252 Gm. of chloride of silver.—JOSEPH BARNES in *Chem. News*.

Detection of Coal-tar Colors in Wines by means of Ammonia and Amyl Alcohol.

In testing for coal-tar colors in wines by the ordinary method of adding ammonia to alkaline reaction and shaking with amyl alcohol, it is necessary to avoid a great excess of ammonia, and the proportion of the latter should never be more than 3 per cent; for if this is exceeded, the amyl alcohol may remain colorless, even if the wine contained a coal-tar color. If the amyl alcohol is colorless, it should be decanted off, filtered, and evaporated with a small quantity of silk, when the foreign coloring matter, if present, will become fixed on the silk.—JAY in *Bull. Soc. Chim. and J. Chem. Soc.*, 1885, 298.

Glycerin and its Uses.*

GLYCERIN IN TOILET PREPARATIONS.

GLYCERIN is perhaps well known to be a useful addition to the sulphur type of lotion for the hair, as the sulphide of lead which is supposed to be formed renders the hair almost as stiff as a board without some such addition.

A very recent hair-dye, and one which is said to be good, may be made by dissolving freshly-prepared ammonio-tartrate of bismuth, or the ordinary scale citrate of bismuth and ammonia, in weak glycerin, and mixing this with a solution of hyposulphite of sodium in glycerin and water, and finally diluting with more water.

Teeth-lotions have also come much into use, and of the many formulæ published the following is a type: Tincture of quillaia, eau-de-Cologne, water, borax, glycerin, with coloring. Such a combination is as excellent for its purpose as it is elegant in appearance.

Almost all cosmetic solutions are greatly improved by the addition of a little glycerin. Of these we may name freckle-lotions, zinc-oxide, and rose-water lotions, calamine lotions, etc.

Liquid starch glosses and finishes have glycerin in them as a *sine qua non*. Here is an example from the *Popular Science News*: Spermaceti, 1 oz.; gum arabic, 1; borax, 1; glycerin, 2½; water, 14½; perfume, q. s. Three spoonfuls to be added to about 4 oz. of boiling water.

Lime-juice and glycerin inseparable may easily be made by the subjoined formula, but I cannot say how much will be the percentage of glycerin. A saturated solution of borax should first be prepared. Here is a note I made a long time ago: 1 drachm of powdered borax to be dissolved in 21½ drachms of distilled water, and during solution warmed slightly to keep the temperature just a few degrees above that of a summer's day; and, to insure accuracy, it is perhaps better to weigh the materials into a large-sized 3-oz. bottle. The oily material consisted of 14 parts of oil of almonds and 2 parts of castor oil, thoroughly mixed. To this quantity of mixed oil was added, all at once, 4 parts of the solution of borax as named (each being accurately measured). On being well shaken, a very white uniform emulsion which did not separate resulted. I believe soap is sometimes added to this preparation, to increase its white appearance and to prevent separation; but I do not know that it is a desirable addition, or that it is effectual in preventing separation." I have, up to this period, had no fault to find with my note.

Glycerin Jelly.—This combination may be made opaque or transparent. For the former, soap, glycerin, almond oil, and perfume are used; for the latter, isinglass, gelatin, or transparent soap, 1 oz., dissolved in glycerin and a little added water, this usually being a perfumed water.

GLYCERIN IN THERAPEUTICS.

I hope, by the introduction of a few brief notes under this head, that we shall not be doing any serious injustice to the medical profession.

Glycerin is reputed to be a safe and very effectual emetic for infants. As a substitute for cod-liver oil, iodized glycerin, with iodide of potassium, forms a good tonic, etc., for phthisical patients whose stomachs are unable to bear this oil.

A combination of a fluid extract of *Cascara Sagrada*, glycerin, and a little tincture of nux vomica is highly praised as a tonic laxative. Ferric chloride and its preparations are very astringent, and hence, when taken internally for some time as a tonic, are liable to do harm. This astringent

effect is greatly counterbalanced by the addition of glycerin, with which this chalybeate is perfectly compatible. (See, however, a paper by Mr. Schacht, *The Chemist and Druggist*, September 15th, 1882.)

An excellent simple remedy, in place of the old-fashioned rum and figs, for tightness of the chest and the cough of old people, is a mixture of 40 fluid drachms of glycerin, 10 of rum, with 1 minim of oil of anise or peppermint.

The combination, as an aperient, in doses of 1 drachm, of glycerin and castor oil in equal parts, is now so old that it has almost sunk into oblivion, but it is undoubtedly, when prepared *secundum artem* and with a little flavoring agent, a valuable and highly efficacious, elegant preparation. The activity of the oil is said to be increased.

An excellent application for scalds and burns is composed of equal parts of glycerin and oil of peppermint. Glycerin, as an external application, is said not to be absorbed by the skin, hence it is of especial value as a basis when such agents as mercuric chloride, iodoform, etc., have to be superficially applied in cases of certain skin diseases, as scabies, etc. 1½ drachm, dissolved in 3 fl. oz. of glycerin, is reported to possess valuable powers in the treatment of scabies, etc.

Iodized glycerin prevents the pitting which may result after an attack of small-pox. As a liniment, in combination with chloral hydrate, camphor, etc., it receives the commendation of sufferers from rheumatism.

When vaporized in a suitable apparatus, and its fumes inhaled, glycerin is a simple expedient in cases of bronchial affections and distressing coughs; and here we may remark that many eminent vocalists are fully alive to the value of this substance as a voice-strengthenener and throat-invigorator.

Salicylate of sodium, dissolved in glycerin, has its medicinal effects greatly enhanced. A good remedy for dyspepsia consists of pepsin, sherry, glycerin, and tartaric acid.

Naphthalin, recommended as an antiseptic agent, with a view to checking diarrhoea, and said to be efficacious in cases of intestinal catarrh, even when chronic, may be administered in glycerin, in which it is soluble when the solvent is slightly warmed. Indirectly connected with glycerin is the use of nitro-glycerin, as a 1-per cent solution in diluted alcohol, for neuralgia, etc.

Mercuric iodide, with glycerin, is a good paint for corns.

An excellent simple febrifuge drink is thus made: Glycerin, 3i.; citric acid, 3ss.; water, ʒvi. Dose, 1 to 2 tablespoonfuls every hour for an adult.

GLYCERIN IN THE ARTS.

Glycerin is very largely used in the manufacture of printing, stamping, and letterpress inks, as also in the preparation of inks for the numerous forms of "graphs." The following is an example of an indelible stamp ink, taken from the *Pharmaceutical Record*: Sodium bicarbonate, 22; glycerin, 85; gum arabic, 20; nitrate silver, 11; solution of ammonia, 20; Venice turpentine, 10; mix according to art. For ribbon-ink: Concentrated glycerin and alcohol, of each 15; anilin, ½ oz. Blacking of excellent quality can be made by means of a judicious combination of soot, glycerin, oils, etc.

A good "graph" is readily made from Russian glue, 2; water, 1; glycerin (1.260), 5 parts by weight. As these sometimes go mouldy, we may mention a wrinkle which will prevent the proneness of gelatin to this trouble. It is simply to dissolve a few grains of boracic acid in the glycerin before incorporating with the other materials.

In the process of vulcanizing india-

rubber, glycerin is found to be of service. It appears that the india-rubber acquires properties which protect it from oils and fats without interfering with its other properties.

For silvering and gilding glass we find our subject again in request, by reason of its reducing action on the salts of silver and gold, and also because the deposit thus produced is of a brilliant metallic lustre. An ammoniacal solution of nitrate of silver is first prepared, and in it is poured a little solution of caustic potash, and then a few drops of glycerin. It is then ready for immediate use, since reduction begins at once, which process is accelerated if a little ether or alcohol be also added to the mixture. The result is said to be most brilliant when a moderate heat is used, and darkness is said to favor the adhesion of the deposit to the mirror.

A polish for leather is thus made:—Shellac, 200; spirit, 1,000; Marseilles soap, 25; spirit, 25 per cent., to dissolve soap, 375; glycerin, 40; to which is finally added 5 nigrosin in 125 spirit.

Mineral-water manufacturers are now availing themselves of the advantages to be derived from the use of glycerin in the preparation of the liqueurs and flavors, etc., which are much in request as beverages.

Glovers use large quantities of yolks of eggs in certain processes involved in the manufacture of kid gloves. An addition of a few per centums of glycerin is said to be a decided advantage. Glycerin preserves the yolks for a long time.

In the preservation of anatomical and other specimens its value is well established, but a little point will perhaps be useful to bear in mind. About six years ago a friend presented me with a nice specimen of the ripe fruit and fresh leaf, with tendrils, of the *Bryonia dioica* which I placed in a bottle with some glycerin and water, but now, although in good condition as far as preservation goes, I find the berries have become wrinkled and some have collapsed, which, I believe, is probably due to a process of osmosis, the liquid within the fruit being of a different gravity from the preservative fluid. If I had first ascertained the gravity of the juice, and made my glycerin solution of a similar gravity, if such had been possible, I think the shape of the fruit would have been retained.

ARTS.

For the preservation of cider, glycerin of salicylic acid is admirable. a very small quantity keeping it good for over twelve months.

A solution of alum, arsenic, and nitre in glycerin is said to be an admirable preparation for "curing" animals' skins. I have a cat's skin which has been successfully prepared with this combination.

To render corks impervious, soak them several hours in a solution composed of ½ oz. glue or gelatin, ½ oz. glycerin, and a pint of water heated to 50° C. After such a treatment they are nearly proof against many corrosive liquids, but are more completely so if they are first well dried and then dipped in a mixture of 4 parts of paraffin and 1 of vaseline, or simply ordinary petroleum oil.

NITRO-GLYCERIN.

The easiest and safest method of preparing this explosive is that which was first introduced by Messrs. Boutmy and Foucher, and which as a new and safe method obtained the prize of 2,500f. offered by the French Academy of Sciences. First by converting the glycerin into sulpho-glyceric acid, and in this form bringing it into contact with the nitric acid, to which an equal weight of sulphuric acid has been previously added.

* By Mr. F. H. Alcock. See also *New Rem.*, 1883, 176.

The details of the process are as follows:

One part by weight of pure glycerin (1.260) is thoroughly mixed with 3 parts of strong sulphuric acid (1.842); there is at once a considerable evolution of heat, and the glycerin is slightly discolored. In a separate vessel a mixture of 3 parts (also by weight) of sulphuric acid and 3 parts of nitric acid (1.4) is made, and both mixtures are then allowed to cool down to about 15° C. The next step is to transfer the two cooled liquids to a tall cylinder, and well stir them together, when a slight rise in temperature (to about 20° or 25°) takes place, followed after the lapse of half an hour or so, by a cloudiness of the acids, due to the separation of minute drops of nitro-glycerin. After standing for about twenty hours the formation of the oil is complete, the whole of it having risen to the surface of the acid mixture; it may then be siphoned off, dissolved in an equal volume of ether, to facilitate its separation, shaken up with successive portions of water until the washings fail to redden blue litmus, and finally heated on a water bath until its weight remains constant. The nitro-glycerin will now be light brown in color, and should have a specific gravity of 1.6, and should detonate readily and powerfully when fired by percussion or by means of a fulminating charge. This substance may be easily recognized by the violent but transitory headache which is experienced on placing an exceedingly small quantity (1-100th of a grain or thereabouts) on the tongue.

In the old processes the nitro-glycerin separates almost instantaneously, and rises in part to the surface, thus rendering washing difficult. In the process above described its formation is gradual and extends over a long period of time.

PHYSICAL AND CHEMICAL USES OF GLYCERIN.

The barometric records made for the *Times* newspaper are from a glycerin barometer. In place of the column of mercury of about 30 inches in length, a tube about 27 feet long is used containing $\frac{1}{4}$ of a gallon of glycerin colored red with anilin. The great advantage of this fluid is that readings can be taken more accurately, for, when subjected to the weight of the atmosphere, while mercury would move 1-10 inch, the height of the glycerin column would be moved through a space of one inch. One objection has to be provided against, i. e., the hygroscopic nature of glycerin, its power of absorbing water from the air being very great. This is remedied, however, by putting a layer of heavy petroleum oil in the cistern of the barometer. There is a glycerin barometer at the Kew Observatory, which also required for its construction $\frac{1}{4}$ of a gallon of glycerin, and, in order to obtain the correct height, the tube passes through two rooms, the cistern being in one and the column read off in the one above.

This fluid, on account of its high boiling-point and low freezing-point, is of constant use in scientific experiments.

Carbolic acid is said to be an adulterant of ordinary or wood-tar creasote. The former is well known to be soluble in glycerin (glycerinum acidi carbolic), and on the addition of water forms a clear solution. Creasote forms a nearly clear solution with this liquid when of sp. gr. 1.260, but on dilution with water it separates out again.

When gallic acid is warmed for a long time with glycerin, even at a low temperature, pyrogallol results, and this process is taken advantage of by photographers, who use a combination of glycerin and pyrogallol or pyrogallol acid in some of their operations.

A delicate test for glycerin is to take

2 drops of carbolic acid with 3,000 to 5,000 drops of water, and add 1 drop of solution of ferric chloride; in the absence of glycerin a blue color results, but if it be present the color does not form. If coloring matters or sugar are present in the suspected liquid they must first be removed. To do this calcic hydrate is added to the liquid to be tested, with some powdered marble, and evaporated, and the mass then exhausted with a mixture of alcohol and ether; the alcoholic solution evaporated to remove ether and alcohol, and the residue mixed with water, and the test applied, first neutralizing any alkali, should any be present. This may be available as a qualitative test for the presence of glycerin in beers, wines, beverages, etc.

The value of glycerin jelly for mounting microscopic objects needs only a passing comment; its manipulation is very easy, and well suited to the tyro embarking in the study of histology of animals and plants.

The fact that glycerin when present in a solution often greatly interferes with the usual chemical reactions should always be borne in mind. Thus ferric bromide mixed with glycerin, and then sulphocyanide of potassium added, gives the usual red color, but ether does not remove that color and impart it to itself. Again, if ferric bromide be added to sulphocyanide of potassium, and then ether added, we get all that we expect, but on the addition of glycerin the ether becomes colorless again. Glycerin also removes auric chloride and uranium nitrate from their ethereal solutions; so, too, an ethereal solution of mercuric chloride, when agitated with glycerin, is found to hand over the greater part of its solvent to the latter solvent.

Glycerin has very recently been used in a process for the preparation of chemically pure metallic bismuth. Ordinary commercial bismuth is dissolved in dilute nitric acid, and the solution mixed with water until turbidity begins to appear; then a sufficient quantity of fixed alkali is added in solution to precipitate the bismuth and render the solution alkaline; twice the volume of the alkaline solution used is now added, and glycerin in sufficient quantity stirred in to re-dissolve the precipitate; filter if necessary. The filtrate is now mixed with a solution of pure glucose 1 : 6 or 8) and laid aside for some time in the dark; filter again. The filtrate is now boiled and well stirred, when finally-divided bismuth is deposited, which must be filtered away, washed, and dried as rapidly as possible.—*Chemist and Druggist*.

Anisic Acid, according to Curci, is formed by oxidation of Essence of Anise, and occurs as colorless, prismatic crystals, soluble in alcohol and ether. Anisate of sodium is its most powerful salt. The acid is decidedly antiseptic, and resembles salicylic acid in its antipyretic effects. This authority states that it causes increased arterial tension, has a feeble toxic action; causes epileptoid convulsions in animals when it is injected into the veins in large quantities. In its pure state it is a good dressing for open sores. Its use as an antipyretic in acute inflammatory affections is not followed by unpleasant after effects, as in the use of salicylate of sodium.—*Rev. Ital. di Therap.*

Sulphate of Cinchonamine, derived from *Remijia purdiana*, is said by Sée and Bochefontaine, to be six times as active as sulphate of quinine. It causes, in toxic doses, 1, Gradual enfeeblement of the nervous system, followed by convulsions; 2, Slowing and weakening of the pulse, and, after large doses, complete arrest of the heart's action in systole.

Borax as Standard Alkali in Alkalimetry.

TROPÆOLIN "00," Helianthin, or Orange "3, Poirrier," which are used as indicators for acids, with which they produce a red color, are not affected by even the most concentrated solutions of boric acid. When, therefore, even a trace of mineral acid is added to a concentrated solution of boric acid, containing any of the above indicators, the red tint immediately appears. The same happens when the indicator is added to a solution of borax, and a trace of mineral acid is added.

Borax, therefore, acts precisely like a free alkali in this case, and, since solutions of borax keep indefinitely and without alteration, it is advisable to use a standard solution of this salt for volumetric use in alkimetry. Borax, however, is not very soluble in water; nevertheless, accurate results can be obtained even with these rather dilute solutions.

One liter of saturated solution of borax contains:

At	Borax, cryst.	Borax, anhydr.	Corresponding to NaO.
0°	22.78 Gm.	12.03	5.64
4°	26.26 "	13.94	6.55
11°	33.39 "	17.98	8.44
16°	42.78 "	23.62	10.62
20°	57.49 "	33.11	15.55
30°	106.82 "	56.48	26.53

In compounds which contain only calcium and boric acid, an excess of volumetric acid is added, the excess of acid determined by volumetric solution of ammonia, and the boric acid determined by the difference.—*Compt. Rend.*

The Preparation of Carmine.

CARMINE is prepared by comparatively simple processes, yet the beauty of the product depends upon various circumstances which are not generally known, and some of which are even now a secret. Even the temperature of the air, light, the condition of moisture in the air and other climatic variations are known to affect the product.

According to the celebrated method of Madame Cenette, fine carmine is obtained as follows: Shake 1 kilo of best cochineal, in powder, with 75 kilos of boiling distilled water, boil for two hours, then add 25 Gm. of pure nitrate of potassium, and after three minutes, 30 Gm. of acid oxalate (binoxalate) of potassium, boil ten minutes longer, then allow to stand at rest during four hours, and transfer the liquid, after settling, into large, glass dishes, where it remains for three weeks. At the expiration of this time, the mould is removed, the liquid is drawn off, as much as possible, with a pipette, and the deposited carmine is dried in the shade.

According to another process, the cochineal decoction is mixed with soda or potash, afterwards with alum, and the separation of carmine effected by addition of albumen or isinglass. Carmine containing albumen is difficult to reduce to powder, being always somewhat granular, and is chiefly used only by confectioners, as painter's color, and for red ink, while that prepared with isinglass is quite friable and applicable for rouge and other delicate purposes. "Burnt carmine" is obtained by cautiously heating ordinary carmine, in small quantities at a time. It is a dark, purple to violet powder and is distinguished by its remarkable permanence.—L. SEDNA in *Neueste Erf. und Erf.*

The Active Principles of Senna Leaves.

MR. RALPH STOCKMAN, of Edinburgh, in a paper published in the *Pharm. Journ.* (1885, March 14th), first reviews the history of the chemical examination of senna up to the present time, and then gives an account of his own investigations, as follows:

"In my first attempt to isolate cathartic acid, I used as precipitants various salts of lead, lime, copper, and soda, but invariably obtained by these methods a substance which, although strongly purgative, always contained a considerable amount of nitrogen. Finally, baryta was used, and by its use a pure cathartate may be got. The method which was finally adopted was as follows: Senna leaves, exhausted with alcohol, were thoroughly moistened with very dilute sulphuric acid in order to set free the cathartic acid from its salts, and then all the matters soluble in cold or hot alcohol were extracted. The alcoholic solution was then precipitated with hot saturated solution of baryta which was added until it no longer gave a precipitate. The whole was then filtered, the residue well washed, and having been put into a glass vessel, a stream of carbonic acid gas was passed through it for some hours. It was again filtered, and as the CO₂ does not decompose all the cathartate of baryta, the cathartic acid is found partly free in the filtrate, and partly as cathartate of baryta in the residue on the filter.

The latter, after treatment with sulphuric acid and filtering, yields a light-brown colored filtrate, which was repeatedly shaken up with ether to remove the coloring matter arising from a slight decomposition of the cathartic acid. It was then carefully neutralized with lead carbonate or oxide at a very slightly elevated temperature, filtered, and so much alcohol and ether added to the filtrate that a moderate precipitate occurred. After again filtering, the filtrate was treated with very great excess of alcohol and ether, the resulting precipitate of cathartate of lead collected on a filter, washed with alcohol, and dried in vacuo over sulphuric acid. There remains in the alcohol-ether, however, a considerable quantity of cathartic acid, because the neutral cathartate of lead seems during the precipitation to form both a basic and an acid salt, the latter of which is not thrown down.

To obtain the baryta salt, the same method practically is used, barium hydrate being substituted for lead.

The neutral solution, however, is only very slightly precipitated by alcohol-ether, and hence baryta water must be added to it, this greatly facilitating the precipitation.

In the filtrate obtained after treating the original barium precipitate with CO₂, there is also a large amount of cathartic acid which may be recovered by adding acetate of lead, treating the precipitate with sulphuric acid, filtering, and then adding to the filtrate baryta water. The resulting precipitate is then washed, and from it either the lead or barium salt obtained as before. By this method, a large quantity of the cathartic acid is undoubtedly lost, unless the various filtrates and precipitates be reworked; but, after trial of many other methods and modifications of this method, I have found that by it the purest specimens of cathartic acid are obtained. The chief points in it are: (1) that the solutions of the active substance must never be evaporated by, or even exposed to heat, as thereby, whether the solution be acid, alkaline, or neutral, decomposition is certain to ensue. This was proved by a series of special experiments, and (2) the use of H₂S must be avoided, as it was probably from this that the sulphur in Kubby's acid arose.

The salts have the following characteristics. Cathartate of lead is a non-crystalline grayish powder. The neutral salt is readily soluble in water, the basic salt insoluble or nearly so, and on treatment with water, the former splits into an acid and basic salt. The baryta salt behaves in the same way. When in mass, it is almost black in color, but when finely powdered becomes yellowish red.

When quite pure, neither salt contains either nitrogen or sulphur, and hence the presence of these bodies in Kubby's cathartic acid must be attributed to impurities. If the salt be decomposed with sulphuric acid and then filtered, a clear brown solution of the free acid is obtained. The test for its purity consists in agitating it with ether, when the latter should remain quite colorless. It is almost tasteless.

Comparatively few experiments were needed to demonstrate the physiological action of cathartic acid.

Test of Chloral Hydrate.

H. W. SNOW, of Salt Lake City, says that when chloral hydrate in solution is treated with a few drops of a solution made by dissolving one part of pure carbolic acid in twenty parts of water, and rather more than an equal volume of strong sulphuric acid is added, a beautiful pink color is developed. One-tenth of a milligramme of chloral hydrate in a cubic centimeter of water will respond to this test.

When large quantities of chloral hydrate are present, the color developed will be a mahogany. In this case a few drops may be mixed with dilute sulphuric acid, in order to observe the pink coloration. Owing to the strongly corrosive action of sulphuric acid, causing it to char and give colors with a large number of organic bodies, this test may not be distinctive without some precautions. The fact that chloral hydrate sublimes readily upon the application of heat may be taken advantage of in separating it from many of those substances which char or give a color with sulphuric acid alone. A little of the substance to be tested is placed in a watch crystal over which has been inverted another watch glass and the whole heated for a few moments on the water bath; the chloral hydrate sublimes and is condensed in colorless drops of (anhydrous) chloral on the upper crystal and may be washed off with water and the solution tested as above.

The slight brown color which many grades of carbolic acid alone gives with sulphuric acid, must not be misinterpreted.—*Western Druggist*.

Cocaine in Acute Coryza.—Dr. W. S. Payst applies a four-per-cent solution to the interior of the nostrils by means of pledgets of cotton, and says that some permanent relief follows a single application. It will, he thinks, be a remedy *par excellence* for hay-fever. [Dr. F. H. Bosworth, of this city, was among the first to observe the good effects of cocaine used in this manner, and his observations are daily confirmed by numerous observers.—*Ed. AM. DRUGGIST*.]

Accident with Lycopodium.—An account is given in the *Journ. de Pharm. d'Als.-Lorr.* of a curious accident in a Strasburg pharmacy. The apprentice was transferring some lycopodium from one bottle to another, when some of the dust resulting suddenly took fire at a gas-jet near by, with a slight explosion. This startled the youth, who dropped the bottle on the floor; a thick cloud of lycopodium dust arose, and itself took fire with a violent explosion, which shattered the windows and broke a good many bottles. The apprentice escaped with a few slight burns.

On a Crystalline Alkaloid from Pomegranate Root Bark.

CARL JULIUS BENDER reports that his investigations on the constituents of pomegranate root bark have convinced him that it contained, besides two amorphous bases, only one crystallizable alkaloid.

An active and pharmaceutically manageable preparation, which the author prefers to call *punicine* (instead of *pelletierine*), is obtained in the following manner:

The powdered root-bark is mixed with about 25% of its weight of slaked lime, and about 5% of soda solution of spec. grav. 1.160 (or an equivalent amount of any other strength), and enough water, to a soft mass. After twelve hours' standing, during which time it has repeatedly been stirred, the mass is placed upon strainers, allowed to drain, and then pressed. New water is added, and the process repeated until the bark is exhausted. The strained liquid is faintly supersaturated with acetic acid, filtered and evaporated, in a vacuum-apparatus, at temperature not exceeding 30° C. (86° F.).

A sufficient quantity of caustic alkali is now added to set the alkaloid free, and the latter extracted by shaking with chloroform. The chloroformic solution is at once shaken with diluted sulphuric acid. The latter should not be used in excess, not more should be used at any one time than can be saturated by fresh alkaloid produced in subsequent operations on the same day.

The neutral solutions of the alkaloidal sulphate are digested with animal charcoal, filtered, mixed with an excess of bicarbonate of sodium (free from carbonate), and then extracted with chloroform absolutely free from alcohol. The chloroformic solution having been dehydrated by shaking with bicarbonate of sodium, and filtered, the bases are removed by agitation with a mixture made in the proportion of 1 Gm. of sulphuric acid to 10 C.c. of water, without using an excess of acid. This process is repeated once or twice more. The solution finally obtained is spread upon plates of glass, and dried, without heat, by exposure to air. The saline mass is scraped together, dissolved in the least possible quantity of boiling absolute alcohol, and mixed with ether, which causes crystals to form. The mother-liquid, still containing some amorphous sulphate, is removed by a suction filter, the residue washed with a small quantity of alcohol containing ether, finally with pure ether to remove the still adhering liquid, and dried at 30° C. (86° F.).

The dry sulphate is now dissolved in distilled water, treated with animal charcoal, filtered, and evaporated in vacuo, when the salt will remain in form of colorless crystals, permanent in the air. The liquids, from which this alkaloid has been removed by means of bicarbonate of sodium, may be worked for the amorphous bases by adding caustic soda, shaking with chloroform, and saturation with acid. The solution thus obtained, neutralized if necessary, is mixed with the residue of the ethereo-alcoholic menstruum, diluted with distilled water, and alternately mixed with solution of tannic acid and very weak water of ammonia, so that *tannate of punicine* may be obtained, which, when washed, pressed, dried at a gentle heat, and comminuted, forms a yellowish-gray powder.—*Pharm. Centralh.*, 1885, 53.

Bicarbonate of Sodium is said by Behring to unite with iodoform in the body to form an iodide, in which state it is found in the urine. By administering the bicarbonate regularly, tolerance of the iodoform can be secured.—*Courrier Med.* and *N. Y. Med. Jour.*

Action of Metals upon Chloral Hydrate.

S. COTTON has examined the action of metals upon chloral hydrate, and has found that the latter is decomposed more or less energetically according to the temperature, the nature of the metal, and the state of division of the latter.

His published results refer only to zinc and iron, and the following is an abstract:

1. *Sheet Zinc*, in squares of about one centimeter ($\frac{1}{4}$ inch).

If chloral hydrate, in aqueous solution, is mixed with such pieces of sheet zinc, decomposition begins at once, but with extreme slowness. But at 80° to 100° C., the evolution of gas is more rapid, about 125 C.c. being disengaged from 600 Gm. of zinc and 10 Gm. of chloral. The resulting gas is composed of hydrogen, and contains traces of chlorinated products.

At the same time there is produced a chloride and an oxychloride of zinc; the latter, which is but little soluble, covers the metal and gradually arrests further action. By continued heat, the chloride of zinc formed reacts upon the not yet decomposed chloral, and alters it so as to cause it to assume a brown tint.

2. *Powdered Zinc* causes the reaction to begin at ordinary temperatures, with considerable energy. The mixture at first becomes heated and then cools off again. If the mixture is heated to boiling, the hydrogen gas, which is given off with great rapidity, contains products of the decomposition of chloroform, such as mono- and bichloromethyl.

The question then arises: What takes place when chloral is in contact with nascent hydrogen?

If the hydrogen is in great excess, and an acid stronger than formic prevents the latter from uniting with the metal, the whole of the chlorine is replaced by hydrogen, and aldehyde is regenerated. The same happens when hydrochloric acid and chloral are brought in contact with zinc, as has been demonstrated by J. Personne.

Under the previously mentioned conditions, however, chloral decomposes, and the resulting formic acid unites with the metal, while the chloroform, which becomes also formed, is reduced by the nascent hydrogen, and transformed into decomposition products.

Iron.—This metal, except when in powder, acts altogether differently from zinc.

On heating, say one kilogramme of smallest iron-tacks with a solution of 50 Gm. of chloral in 500 Gms. of distilled water, a large proportion of undecomposed chloroform distills over. At the same time, however, another portion of it is reduced just as in the case of zinc.

Iron, in form of powder, disengages from the solution a great deal more hydrogen than when used in larger pieces, and the chloroform, in this case, is altogether reduced at the moment of its formation.

If these processes are made to take place in an apparatus so constructed that the vapors given off are successively conducted through several wash-bottles, then the first of the latter, which must be kept cold, will be found to contain a certain quantity of unaltered chloral, carried over by the heated vapors. The second wash-bottle does not contain a trace of chloroform.—*Rép. de Pharm.*

Antiseptic Silk is made by Dr. Freeman, by boiling Chinese twist for ten minutes in a two-per cent solution of chromic acid, and soaking it for twelve hours in a one-per-cent solution. These sutures cause no suppuration, and the silk does not soften.—*Lancet*.

Solubility of Carbon Disulphide and of Chloroform in Water.

G. CANCEL and F. PARMENTIER, who have already published the results of certain experiments on the subject of the solubility of disulphide of carbon in water, recently completed their report. We take from it the following:

1. Solubility of Disulphide of Carbon:

1 liter of water dissolves of CS₂.

	Gm.		Gm.
at 0° C.	2.04	at 30° C.	1.55
5° "	1.99	35° "	1.37
10° "	1.94	40° "	1.11
15° "	1.87	45° "	0.70
20° "	1.79	49° "	0.14
25° "	1.69		

2. Solubility of Chloroform:

1 liter of water dissolves of CHCl₃.

	Gm.
at 0° C.	9.87
3.2° "	8.90
17.4° "	7.12
29.4° "	7.05
41.6° "	7.12
54.9° "	7.75

A remarkable fact is here to be noticed. While the solubility of disulphide of carbon decreases uniformly with the increase of temperature, the point of least solubility of chloroform lies near 30° C. (86° F.). The solubility of the latter increases both upward and downward from this point on the thermometric scale, but it is most soluble at the freezing point of water (0° C. = 32° F.).

A clear saturated solution of chloroform made at a temperature of near 30° C. will become turbid neither by cooling nor by heating. One made at 4° C. will become turbid on raising the temperature, from the separation of chloroform, and if made at 59° C. it will become turbid on cooling.

The chloroform which the authors used for their experiment was made from chloral, and had the following specific gravity:

	Gm.
at 0° C.	1.5261
5° "	1.5168
10° "	1.5075
15° "	1.4981
20° "	1.4888
25° "	1.4798
30° "	1.4698
35° "	1.4608

—*Compt. Rend.*, vol. 100, 773.

To discriminate between Butterine and pure Butter.

THIS method enables any one to put it into practice. Having ready two small but wide-mouthed glass test-tubes, about four inches high with feet attached, into one put a piece of butterine or oleo-margarine (about the size of a hazel-nut) and cork this tube; into the other put a similar sized piece of pure butter, and cork that tube; next take one in each hand at the bottom; in ten minutes the butterine melts into a clear oily fluid by the mere heat of the blood (98° F.).

Pure butter takes twice as long to melt as butterine, and even then is not so clear and oily as butterine, which is a noteworthy difference between them; this is the physical test. For the chemical test, after the tubes have stood to cool for a few minutes, pour on ether to about one-third of the tube, and cork well. Agitate the tubes—one in each hand—clapping them well. The butterine readily dissolves into a clear liquor, which the addition thereto of 20 or 30 drops of spirit of wine does not disturb or precipitate; but a similar experiment with pure butter produces a voluminous white precipitate. Hereby we can easily distinguish one from the other. Even butter adulterated with a portion of oleo-margarine or butterine may be detected by a precipitate being formed.—JOHN HORSELEY in *Chem. News*, March 6th.

Anthracene from Water-Gas Tar.

In a paper read before the late meeting of the Am. Assoc. for the Advancement of Science, Dr. A. E. Elliot read a paper on the above subject, from which we select the following brief portion:

"A little more than a year ago I obtained some of the tar formed during the manufacture of so-called water-gas. The tar is obtained in that part of the process where a mixture of carbonic oxide and hydrogen containing the vapor of petroleum naphtha is passed through red-hot retorts. This proceeding converts the hydrocarbons of the paraffin series into a mixture of ethylene, acetylene, and members of the aromatic series. It was already known to me that this tar contained naphthalin in very large quantities, and it appeared most probable that other hydrocarbons of the aromatic series were also present, more especially anthracene. Since anthracene is the most valuable of the higher members of the aromatic hydrocarbons, from its use in the production of alizarin, and the way is not far distant when water-gas will be used more extensively, at least in the United States, the value of water-gas tar for the manufacture of anthracene appeared to me of considerable importance. My first efforts were confined to the distillation of the tar, and an examination of that part of the distillate that comes over at 210° to 350° Celsius. This distillate was dissolved in glacial acetic acid and gave a clear solution, which was treated with a mixture of chromic acid dissolved in a mixture of acetic acid and water, according to the well-known method of Lück. After digesting some hours, the mixture was poured into water, and a flocculent precipitate separated. This precipitate, having all the appearance of anthraquinone, was thoroughly washed with water, then with dilute solution of sodii hydrate, and finally with water again. The result of this experiment was that that part of the tar distillate coming over between 210° to 350° contained 5.8 per cent of anthracene.

[Attention had already been directed by G. Bibanoff (*Technik III.*, 31), upon the possibility of producing anthracene from naphtha-residues. This question is of vital importance to Russia, which does not possess an alizarin factory, and is compelled to buy this dye-stuff abroad. The chief obstacle was the impossibility of getting a sufficient supply of anthracene. If this substance, as now appears, can be obtained in reasonable quantities from petroleum, which is so abundant in certain portions of Russia, the home manufacture of alizarin will probably soon become an established fact.—Ed. A. D.]

A Harmless Soldering Mixture.

A correspondent of the *Sanitary Engineer* draws attention to the fact that a patent has recently been issued for a harmless liquid to be used in place of chloride of zinc solution for moistening tin-plate to be soldered, particularly in the case of tin-cans containing articles of food. The inventor is C. N. Waite, of Littleton, Mass. It is composition is, equal parts by weight of lactic acid and glycerin.

Pilocarpine.—Mollière uses a sixth of a grain hypodermically of muriate of pilocarpine in pneumonia, with the effect, he says, of diminishing blood-pressure and relieving cerebral disturbance. He considers the latter to be caused by interference with the renal function and consequent uræmic poisoning. The profuse perspiration following the action of the remedy is calculated to remove the urea from the blood.—*Lyon Méd.* and *N. Y. Med. Jour.*

Explosive Compound.

A BIRMINGHAM correspondent of the *Chemist and Druggist* writes:

"Whilst transacting business with a chemist in the town, I was witness to a most curious and unexpected experiment. A customer came into his shop and asked for three-pennyworth of white arsenic, two-pennyworth of chloride of lime, and two-pennyworth of soft soap. The lime and arsenic to be mixed together, so that half could be used for one room and the remainder for another room, for the purpose of ridding them of fleas. The customer would call again in about ten minutes. The chemist mixed four oz. arsenic and six oz. of lime with an old steel knife on a piece of common paper, labelled it poison, and placed it aside. After a few minutes a slight report, with a violent effervescing noise, was heard in the vicinity of the parcel, and immediately the shop was filled with a dense grayish-white smoke of the most choking and irritating properties, which made us withdraw for a breath of fresh air; as soon as possible a large thick duster was thrown over the parcel, it was carried out to the back, and some water thrown upon it, which at once killed it. It was some minutes before the shop was cleared of smoke, and we were able to stay in it. Text-books are silent on such a mixture. Whether it was a case of chemical affinity or combustion, perhaps some of your analytical competitors may be able to inform us. In mixing a fresh lot, the arsenic was mixed with the soap and the lime put by itself."

Tough Filtering-Paper.

MR. E. E. H. FRANCOIS communicated a most interesting paper to the Chemical Society "On Toughened Filter-paper," which, if it fulfils the statement made concerning it, will be a great boon to operators. Filter-paper is recommended to be immersed in nitric acid, sp. gr. 1.42, and to be washed with water. It is then remarkably toughened, the product being pervious to liquids, and quite different to the parchment-paper made by means of sulphuric acid. It can be washed like a piece of linen. So treated it contracts in size, and the ash is diminished, the weight is slightly reduced, and it contains no nitrogen. The toughened paper can be used with the vacuum-pump in ordinary funnels, without extra support, and fits sufficiently close to prevent undue access of air, which is not the case with parchment-paper. An admirable way of preparing filters is also suggested: dip only the apex of the folded paper into nitric acid, and then wash with water; the weak part is thus effectually toughened.—*Chem. and Drugg.*

The Reaction of Fused Chlorate of Potassium.

THE German [and also the U. S.] Pharmacopœia directs that the residue left after igniting chlorate of potassium should have no alkaline reaction [should have a "neutral reaction," U. S.], which is supposed to indicate the original presence of nitrate of potassium.

According to Dr. Vulpius, this test is unsatisfactory, since chlorate of potassium, even if entirely free of nitrate, yielded an alkaline residue. Vulpius draws attention to an observation of Wagner, that oxygen gas prepared from chlorate of potassium often contains chlorine, in which case the residue always had an alkaline reaction; and further, that chlorine was always given out, as long as not every trace of organic substance or of carbonic acid gas was excluded. Yet it is very rare for organic substances to be entirely absent from the salt, and this

is, therefore, the cause of the alkalinity of the residue. Vulpius thinks that any chloride of potassium present may lose chlorine at an elevated temperature, and leave an alkaline residue of oxychloride.

Dr. Vulpius recommends to modify the test as follows: Fuse 1 Gm. of the chlorate in a test-tube and continue the heat until it becomes again solid. Let cool and dissolve the residue in 4 C.c. of water with the aid of a gentle heat. 10 drops of this liquid, when added to a mixture of 1 drop of phenolphthalein solution and 2 C.c. of water, should not produce a trace of red color.—*Pharm. Centralb.*

The Active Principles of Ergot.

TANRET, the discoverer of ergotinine, denies the correctness of the results lately obtained by Dr. Kobert in his investigations on the active principles of ergot (of which we gave an abstract in our February number, page 25). This author had announced the discovery of a new alkaloid, to which he gave the name *cornutine*, at least preliminarily. Dr. Kobert claims that Tanret's ergotinine, when pure, does not affect the uterus, and possesses oxytocic properties only when contaminated with cornutine. Tanret claims that the method by which Dr. Kobert obtained his cornutine—exposing an acid solution of ergotinine for some time to the air, etc.—resulted simply in obtaining impure ergotinine. He draws attention to the apparent anomaly between the facts that 1st, ergotinine (Tanret's) does contract the uterus, and 2d, Dr. Kobert's assertion that "cornutine" itself does not produce this effect, but that ergotinine, containing "cornutine" as an impurity, may do so.—After *Journ. de Pharm.* [5], XI., 309.

Estimation of Fragrant Essential Oils.

If an aqueous or alcoholic solution of bromine is added gradually to an aqueous or alcoholic solution of an essential oil (for example, rose, geranium, neroli, rosewood, bergamot, lemon, orange, lavender, marjoram, cummin, eucalyptus), the color of the bromine solution is discharged up to a certain point, beyond which any further addition of bromine produces a permanent coloration. The end of the reaction is also distinctly marked by the disappearance of the odor of the essential oil, and if the oil and bromine are in aqueous solution, by the sudden appearance of a whitish resinous precipitate. The amount of bromine required is always proportional to the amount of essential oil present, but a correction must be made for the quantity of bromine solution (0.2-0.3) necessary to impart a distinct coloration to the quantity employed (25-30 C.c.).

When an aqueous solution of an essential oil is distilled in a flask connected with a Liebig condenser, the whole of the oil comes over with the first 20-50 C.c. of the distillate, according to the amount of oil present.

The author's method consists in concentrating the essential oil by distillation, titrating the first portion of the distillate with a solution of bromine, standardized by means of a standard solution of the particular essential oil.—A. LEVALLOIS, in *Compt. R. and J. Chem. Soc.*

Old and musty ethereal oils may be partially restored by shaking 100 parts of the oil with a mixture of 1 part of permanganate of potash in 8 parts of distilled water. They should be shaken vigorously for a quarter of an hour several times, with intervals of one hour's rest, and afterwards drawn off and washed with warm water.

Chloride of Methyl, used in the form of spray, is recommended by Tenneson in the treatment of neuralgia, articular and muscular rheumatism, pleurisy, acute pneumonia, and tuberculous joint diseases, in all of which pain is at once relieved by the local use of the spray. A prolonged erythema, more or less cutaneous hyperæsthesia, and blistering are some of the minor accidents that may occur, and which are avoidable by not directing the spray upon a single spot for more than five or six seconds at a time.—*Rev. de Méd. and N. Y. Med. Jour.*

Boldo and Boldine.—Laborde refers to Dujardin-Beaumetz's experiments, reported in 1874, and speaks of the hypnotic effect of the alkaloid. Five or six grains cause, in the human subject, deep sleep, followed by no unpleasant sensations.—*Union Méd. and N. Y. Med. Jour.*

Jacaranda Lancifolia is said by Alfred Wright to be serviceable for gonorrhœa, when given in doses of twenty to thirty minims of fluid extract of the leaves, three or four times daily. It acts promptly in the acute stage, diminishing both the pain and the discharge, and being followed by no unpleasant after-effects.—*Lancet.*

Sulphate of Copper.—Dr. Du Moulin says that salts of copper have a specific action upon strumous affections, and asserts that under their use enlarged glands diminish rapidly in size, and scrofulous eruptions disappear.—*Gaz. Hebdom.—N. Y. Med. Jour.*

Solubility of Mercuric Iodide in Water and in Alcohol.—E. Bourgoin has ascertained that biniodide of mercury is soluble in water at the rate of 4 centigrammes per liter (or: 0.617 grain in 3½ fl. oz.), the solubility increasing with the temperature, and also by the addition of alcohol. One liter of alcohol of 80 per cent dissolves 2.857 Gm. (44 grains) of mercuric iodide, and one liter of absolute alcohol dissolves 11.86 Gm. (184 grs.).—*Rép. de Pharm.*

It is said that the preservative and antiseptic action of salicylic acid cannot be relied upon when brought into contact with any liquid substance in wooden vessels or casks. The salicylic acid under these circumstances speedily disappears, being apparently absorbed and decomposed by the wood tissue. When this acid is used as an addition to drinking water or wine, the cask must first be coated with pitch.

Lubricant for Glass Stop Cocks.

DR. SCHONDORFF and S. SMITH recommend as the best lubricant for glass stop-cocks in chemical glass-ware (such as burettes, etc.), a solution of gutta percha in a mineral oil of high boiling point. Such a solution is scarcely attacked even by concentrated sulphuric acid.

Glacial Acetic Acid dissolves almost all protein bodies, especially albumen and fibrin, but not casein. It, of course, destroys warts and corns.

Dilute Phosphoric Acid is a pleasant acid in fevers, and dissolves phosphates in the urine quite as well as the other mineral acids. It is well given in lemonade or syrup of raspberries.

Chinese Bandoline.—Pan-fa is the Chinese name for the shavings of a species of elm (?), fragments of which, soaked in warm water one night, produce a vegetable mucilage or bandoline as useful for dressing, curling, and crimping the hair of the Chinese beauty as is the quince-seed of to-day here.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,480.—Manganese Ore.

Warren & Penfield, of Mt. Vernon, Ohio, desire information as to the market value of manganese ore assaying 35 to 40% of metal, and also as to who will buy it.

We have made inquiry, and learn that its value in the neighborhood of New York would hardly warrant the expense of transportation from Ohio, and it has been suggested that Pittsburgh would be the natural market for Ohio ores. Will some reader in that (or other) locality have the kindness to furnish the information asked for? As to the value of the ore, it should be remembered that the pharmacopoeia requires black oxide of manganese (or pyrolusite which we presume the ore is) to contain at least 66 per cent of the pure oxide. Some qualities contain a great deal more. At the rate of 66 per cent of pure oxide, it would contain 43.4 per cent of pure metal. A commercial oxide of this kind can be bought in the market—according to the quantity—for perhaps three to four dollars a cwt.; in larger lots for a great deal less. Our correspondents' sample, according to their own statement, contains less than the lowest amount required by the pharmacopoeia, and the limit there given is quite fair and not too high. We therefore do not think it would fetch at any time a price as high as that quoted for the 66 per cent oxide.

No. 1,481.—Cat's-Eye (J. E., New Jersey).

The cat's-eye is one of the varieties of sapphire, or stones of the corundum series. It is brought usually from Ceylon. Threads of white asbestos are inclosed within it, and reflect the light in a very peculiar manner. When cut *en cabochon* (or smooth), a white band of light is seen floating in its interior that changes position as the gem is moved before the eye. Louis Dieulafoy gives its characteristics as composed mainly of alumina, with a trace of oxide of iron and oxide of copper (more recent authority states it to consist of silex, 95.0; alumina, 1.75; lime, 1.25; oxide of iron, 0.25); gray-green in color, with concentric veins; s. g. 3 to 3.6; 8.5 in the scale of hardness (diamond being 10); doubly refractive; index of refraction, 1.76; dispersive power, 0.033; capable of retaining electricity for several hours, infusible, vitreous and opalescent in lustre, and semi-transparent. In the Imperial cabinet at Vienna there is a "cat's-eye" five inches in length, of a greenish color, which is valued at a fabulous sum.

No. 1,482.—Aqueous Solution of Bisulphide of Carbon or of Benzin (M.).

Neither of these liquids is soluble, in more than traces, in water. By the intervention of sulpholeates, however, they may be readily dissolved. We were the first to publish an account of the so-called Polysolve and Polysolve-Preparations introduced by Dr. A.

Müller-Jacobs (see AMER. DRUGG., 1884, 22), where you will find a full account of the nature and properties of these compounds. Suffice it to say that 1 part of a sulpholeate or polysolve will mix clear with from 1 to 2 (or even more) parts of benzin or bisulphide of carbon, and, if these liquids are mixed with a little ammonia, they may be diluted with water without separation of the dissolved liquids.

No. 1,483.—Silk Culture (F. O. R., Mass.).

See the publications of the Agricultural Department, Washington, D. C. If they are not already in the possession of some one in your vicinity, you can probably obtain them by asking for such as contain the information you wish. "Special Report No. 11" will probably embrace all you desire to know.

No. 1,484.—Protecting Metallic Vessels from Acids (J. M. S.).

Unglazed or unenamelled metallic vessels can be protected in various ways, provided the acid is not to be heated in them. One way is to coat them inside with a moderate layer of paraffin, or to line them with asbestos-felt saturated with paraffin. Another is to line them with a single piece of sheet-rubber. When working with hydrofluoric acid—which you specially inquire about—and you do not possess a large flat-bottomed dish of caoutchouc or rubber, you may take any kind of shallow, flat-bottomed vessel, lay into it a piece of sheet-rubber, and pour the acid upon the latter.

No. 1,485.—Hand Grenade Fire Extinguishers (R.).

These are dependent for their action principally upon the volume of carbonic acid gas given off when the bottle is broken. Their contents vary, so far as we know. One kind which we have examined contains a sediment of about $\frac{1}{4}$ inch in depth and a colorless liquid. On opening the vessel cautiously, a certain amount of free carbonic acid gas is given off, but the pressure is not very great. The liquid contains a great amount of chloride of sodium, perhaps partly formed in the bottle by the mutual reaction of hydrochloric acid and carbonate or bicarbonate of sodium. Besides, the liquid contains chloride of ammonium, sulphate of ammonium, and bicarbonate of sodium. There are minute amounts of other substances present, probably only impurities from the ingredients used. The sediment is bicarbonate of sodium (chiefly). In one of the original patents, it is stated that the acid is contained in a separate receptacle, in the stopper, but in the grenade we have examined, this is not the case.

We have read of other constituents which have been found in some of these grenades—for there are several kinds in the market—all of them, we have been told, made under a license from the original patentees; but we have not examined them.

No. 1,486.—Fracture of Bottles Containing Carbolic Acid (B.).

Probably every one of our readers will have had experience with bottles of carbolic acid which have been found broken without any apparent cause. Our correspondent asks us for an opinion regarding the phenomenon. We can, however, for the present only give hypothetical views or speculations, as we never examined the question minutely, though we often were troubled by the same inconvenience.

One thing we have noticed, that any original bottle of carbolic acid in which the acid had become liquefied by being placed in a warm position never broke as long as the acid remained liquid. Occasionally, how-

ever, one or another of these will become exposed to sufficient cold to cause the contents to crystallize. If the crystallization takes place slowly, and crystalline needles form throughout the liquid uniformly, we can imagine of no reason why the bottles should burst, because the crystals have plenty of time to arrange themselves, and could never exert a sufficient pressure upon the sides or bottom to cause a fracture of the glass. Sometimes, however, one side or a special spot of a bottle is more exposed to cold than another. In such a case, crystallization will start at this spot. And this will generally take place quite rapidly, the crystals radiating from here in all directions. In fact, the inner surface of the bottle, at this special spot, is the place of growth of the crystals. Now when these crystals are formed—and this usually occurs quite rapidly—they absorb heat from the surrounding liquid, as well as the glass, and cause such a contraction of the latter in one spot that the glass frequently gives way. This is the most feasible explanation we can give.

We have, however, known of cases where bottles containing carbolic acid in crystals were exposed to such temperature that at no time any portion of the contents melted. And though every one of them was unbroken in the beginning, some of them nevertheless became fractured after a while. In these cases, the breakage must be due to the inability of the glass to contract evenly in all directions, by the lowering of the temperature, the contained cake of crystals being too rigid to give way under the pressure of the the glass.

If any further facts or explanations can be offered by any of our readers, we shall feel obliged for their communications.

No. 1,487.—Iodoform (W.).

As we have already once stated, new processes have been patented during the last year or two, for making iodoform (and also chloroform and bromoform) more economically. The last patent was granted in Germany to the Chem. Fabrik auf Actien (formerly E. Schering) for a process in which these substances are obtained by electrolyzing an alcoholic solution of iodide of potassium, calcium, or sodium. If iodide of potassium is used, a stream of carbonic acid gas must be constantly conducted through the liquid. If either of the two other substances are used, carbonic acid gas is not necessary.

No. 1,488.—Mending Ruptured Leather-Belting (J. K.).

One of our correspondents wants to know how he may repair a torn leather-belt which he does not wish to throw away, and into which he cannot put metallic rivets, on account of the polished pulleys.

We have no personal experience in this matter, but have lately seen the following plan recommended:

Soak 100 parts of best glue in cold water. When soft, pour off the excess of water, melt the glue on the water bath, then add 3 parts of glycerin. Prepare the belting by roughening the surfaces to be glued together for as long a distance as possible (not less than about 8 inches), by means of a rasp, then having excluded day-light (or working with non-actinic artificial light), add to the melted glue 3 parts of bichromate of potassium dissolved in just enough boiling water, mix well, and apply the mixture to the roughened surfaces, rubbing it well in. Lay them carefully over each other, and compress them strongly between boards. When dry, run a seam of stitches, as an additional protection, across the ends of the pieces, and, if necessary, also across the centre of the flap.

No. 1,489.—**Extemporaneous Preparation of Mineral Waters** (Ed. W.).

It is not very difficult to devise formulae for imitating the natural mineral waters, but it must be understood that the imitation is more or less empirical, inasmuch as we can, in many cases, only guess at the manner in which the various acids and bases are combined. Further, each mineral water contains certain constituents, often only in traces, to which no special beneficial action is assigned, and which are considered only as unavoidable, but inert substances. Hence, only the more important constituents are usually put in.

In **NEW REMEDIES** of 1878 (pp. 313, 347, 371) and 1879 (p. 28), we have given formulae for the preparation of the most important waters. If you desire to ascertain the composition of any foreign mineral water, the analysis of which has been published previous to 1883, we refer you to the important work: "Heilquellen-Analyse." Von Dr. F. Raspe. 8vo. Dresden, 1883. (The work contains only a few American waters.)

A simple formula for Selters and Pullna water has been given, some time ago, by the *Pharm. Zeitschr. f. Russl.*, namely:

1. **Pullna Water**.—Prepare two liquids, one containing the carbonates, the second, among other ingredients, the acid. The former may be labelled "Pullna (Base)," the latter "Pullna (Acid)."

Pullna (Base):

	Parts.
Sulphate of Sodium.....	5,760
Bicarbonate of Potassium.....	154
Bicarbonate of Sodium.....	2,197
Distilled Water.....	84,320
Dissolve and filter.	

Pullna (Acid):

	Parts.
Calcium Carbonate.....	80
Magnesium Carbonate.....	900
Magnesium Sulphate.....	5,725
Hydrochloric Acid (sp. gr. 1.120)....	1,680
Sulphuric Acid (sp. gr. 1.850).....	1,413
Distilled water.....	32,460
Dissolve and filter.	

For use, take 100 Gm. (ab. 3 fl. oz.) of each liquid and add to a pint of water.

2. **Selters**.—Prepared in a similar manner.

Selters (Base):

	Parts.
Bicarbonate of Sodium.....	4
Distilled Water.....	40
Dissolve and filter.	

Selters (Acid):

	Parts.
Diluted Sulphuric Acid (sp. gr. 1.113)	5
Diluted Hydrochloric Acid (sp. gr. 1.040)	1
Distilled Water.....	40

For use, take two tablespoonfuls of each liquid to a glass of water.

More complicated and more approaching the original is the following:

Selters (Base):

	Parts.
Carbonate of Sodium.....	142
Chloride of Magnesium.....	22
Sulphate of Sodium.....	3
Chloride of Sodium.....	300
Chloride of Calcium.....	240
Bicarbonate of Sodium.....	1,200
Water.....	5,760
Dissolve and filter.	

Selters (Acid):

	Parts.
Diluted Sulphuric Acid (sp. gr. 1.113)	2,700
Diluted Hydrochl. Acid (sp. gr. 1.040)	540
Water.....	8,640

For use, take 2 tablespoonfuls of the base and 1 tablespoonful of the acid to a glass of water.

No. 1,490.—**Clemens' Solution of Bromide of Arsenic.**

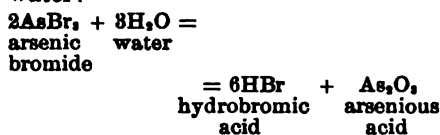
We published the formula of this preparation several times, see New

REM., 1883, 372 (compare also 209) and AMER. DRUGG., 1884, 37.

As bromide of arsenic can be bought from the manufacturing chemists, we append the formula employing the ready-made salt:

	Parts.
Bromide of Arsenic.....	13
Distilled Water.....	620
Mix by trituration, until solution has taken place, then filter.	

The resulting solution does *not* contain the bromide of arsenic as such, but contains only hydrobromic and arsenious acids mixed, which are generated by the contact of the salt with water:



The free bromine which is often contained in the bromide of arsenic of the market remains in solution in the liquid, and colors it brown.

As the 633 parts of solution above resulting contain theoretically 13 parts of bromide of arsenic,

$$\text{As Br}_3 \\ 79.4 + 239.4 = 318.8$$

these 13 parts are equivalent to 4.219 parts of arsenious acid and 9.82 parts of hydrobromic acid. The official hydrobromic acid contains 10 parts of the anhydrous acid in 100, and 9.82 is so near to 10, that we are justified in considering the two figures practically identical. Therefore, instead of taking the commercial bromide of arsenic, which is always of uncertain composition, it would be much better, and insure a much more uniform product, to prepare the solution thus:

	Parts.
Arsenious Acid.....	4.219
Diluted Hydrobromic Acid (U. S. P. 10%).....	100.0
Water, enough to make....	633

or in apothecaries' weight and measure, and in definite terms:

Arsenious Acid.....	65 grains.
Hydrobromic Acid, 10%..	3 fl. oz. 74 min.
Distilled Water.....	17 fl. oz. 435 min.
Dissolve, mix and filter.	

This latter formula is offered *provisionally*, being deduced theoretically and based on the observed fact that bromide of arsenic (and also iodide of arsenic) decomposes by contact with water, the halogen taking hydrogen and the metal oxygen. The solution, as prepared by the last-named method, should be tested and approved therapeutically, before being dispensed in this manner. As soon as occasion offers, we shall take steps in this direction ourselves.

No. 1,491.—**Work of Reference** (J. E. L.).

This correspondent asks us to recommend a book of reference for druggists, in which may be found the common English names of plants, herbs, roots, etc.

We can recommend, outside of the standard works like the Dispensatories, the following:

C. E. Hobb's "Botanical Hand-Book." 8vo. Boston, 1876.

Wm. Miller. "A Dictionary of English Names of Plants." 8vo. London, 1884.

J. M. Nickell's "Botanical Ready Reference."

You may also frequently find information, which is looked for in vain elsewhere, in Gray's "Supplement to the Pharmac.," edited by Th. Redwood.

No. 1,492.—**Shampoo** (J. W. S.).

A good shampoo, for removing dandruff, etc., from the scalp may be prepared by dissolving borax in water, with or without the addition of a little carbonate of ammonium. Very generally, carbonate of potassium is used

by barbers. The proportion of these salts is about $\frac{1}{4}$ oz. to the pint. A stimulating effect may at the same time be produced by the addition of some alcohol or bay rum. We think the following a very good preparation:

Borax.....	1 oz.
Carbonate Ammonium.....	$\frac{1}{4}$ oz.
Aromatic Spirit of Ammonia.....	1 f. oz.
Bay rum.....	4 f. oz.
Water, to make.....	1 quart.

Pineapple Syrup.

Cut 5 parts of peeled pineapple into thin slices, put them into a suitable vessel, pour on 5 parts of good white wine, 5 parts of water, and let the whole stand for several days at a moderate temperature. Next make a syrup by heating 30 parts of sugar with 30 parts of water to boiling, skim, add the pineapple mixture, raise quickly to boiling (once or twice), and strain at once, without pressure, through clean flannel. Preserve the syrup in stone jugs or bottles, in the cellar.—*Neueste Erf. und Erf.*

Peach or Apricot Syrup.

Cut 5 parts or peaches or apricots, without kernel, into thin slices, pour on them 5 parts each of good white wine and water, let stand for several days in a moderately warm place, then strain through linen, with gentle pressure. Make a thick syrup from 40 parts of sugar and 30 of water by boiling, add the peach-mixture, quickly raise once more to boiling, and strain through flannel. Transfer the filtrate into stone-jugs or bottles, to be preserved in the cellar. Before closing each bottle, add to its contents $\frac{1}{4}$ part of peach-essence.—*Neueste Erf. und Erf.*

"Dentifrice."

	Gm.
Oil of Peppermint, "English".....	10.0
Oil of Anise.....	4.0
Oil of Staranise.....	4.0
Oil of Cinnamon, Ceylon.....	1.0
Oil of Rose.....	0.5
Oil of Cloves.....	2.0
Tincture of Ambergris.....	2.0
Tincture of Vanilla.....	10.0
Tincture of Cochineal.....	25.0
Tincture of Logwood.....	2.0
Tincture of Orris Root.....	6.0
Sugar.....	10.0
Alcohol.....	1 liter
Digest for 24 hours and filter.	

—*Pharm. Zeit.*

Enamelling Casks.

INSTEAD of coating the wood of casks with the enamel, the latter is allowed to form in the wood in the following manner: The cask or vat is in the first place treated with an aqueous solution of an enamel obtained by fusing 100 parts of pure silica with 50 parts of alkali. It is then filled with a solution of aluminium acetate in water, mixed with sulphuric acid in the proportion of 4 : 2 : 1. The solution acts on the enamel which has penetrated into the wood, and produces a neutral enamel of silica within the pores of the wood.—F. G. SPONNAGEL, in *Dingl. Pol. J.* and *J. Chem. Soc.*

Sleeping Potion.—Dr. Victor Aubou recommends the following:

	Gm.	Gr.
Paraldehyde.....	2.0	80
Peppermint Water.....	60.0	2 fl. oz.
Orange-Flower Water.....	60.0	2 fl. oz.
Syrup of Acacia.....	25.0	$\frac{1}{4}$ fl. oz.

To be taken in one or two doses in the course of a quarter of an hour, at the time when sleep is to be induced. The dose may be reduced to 1 Gm. or raised to 3 or 4 Gms. The above dose acts about the same as an equal quantity of chloral hydrate.—*Journ. de Ph.*

Naphthalin—Rossbach uses the following formula for administering naphthalin in diarrhoea:

Naphthalin,
White sugarãã 75 gr.
Essence of Bergamot. .¼ gr.

Divide in 20 powders; 5 to 20 to be taken daily for diarrhoea, especially when due to tuberculosis of the intestine.—*N. Y. Med. Jour.*

A Dublin School of Pharmacy.—The Council of the Pharmaceutical Society of Ireland is contemplating the establishment of a school of pharmacy in Dublin.

Dr. Kristalba, a German chemist, recommends crushed graphite as a useful substitute for sand in the sand bath.

For Good Bold Labels for stock bottles the *Journ. de Ph. d'Als.-Lorr.* recommends a paint made from 10 parts of liquid silicate of soda (soluble glass) and 1 part of common oxide of zinc. Three or four layers of this paint to form the white ground, the letters to be



Student: "Why are you running so fast?"
Young Doctor: "I must hasten to a patient."
Student: "Better come with me to the tavern."
Young Doctor: "What! and let my patient get well?"
—*Fliegende Blätter.*

marked on with coal-tar diluted with a little turpentine.

Therapeutic Inutility of Vaseline.—Dr. MIELOK, of Hamburg, in the *Monatshefte für praktische Dermatologie*, states that the human skin is impermeable to vaseline, in consequence of which the use of this substance prevents the absorption of such medicaments as are mixed with it for this purpose.

Bath Soap-pads.—One of the great drapery houses of Paris is selling at 4d. each little linen bags for baths, described as "Bain savonneux à l'extrait de son," a sort of oatmeal soap bath. The bag contains altogether about half a pound of a perfumed mixture of bran, meal, and powdered soap. On wetting and pressing a good lather is produced, as well as a soft pad for rubbing the body.

Benzoic Acid.—A good pill can be made with five grains and one minim of glycerin. This is a convenient way for giving it in phosphatic deposits.

Calendar of Meetings of State and other Medical Associations.

WITH REFERENCE TO THE FACILITIES OFFERED FOR THE EXHIBITION OF OBJECTS OF INTEREST TO THE MEDICAL PROFESSION.

1. Date of Meeting.

2. Name of Society.

3. Place of next meeting.

4. Number usually in attendance (members and others).

5. Are exhibits made in connection with the meeting?
6. Does the society make provision for such exhibits?

7. Are there any taxes or licenses which apply to non-resident exhibitors?

8. Or to non-residents who sell?

9. Secretary or Chairman of the Committee of Arrangements.

1	2	3	4	5	6	7	8	9
Apr. 14, 15, and 16.	Tennessee State Med. Soc.	Nashville.	150	yes	yes	no	no	Dr. C. C. Fite, Nashville.
" 14, 15, 16, and 17.	Alabama State Med. Soc.	Greenville.	125	yes	yes	no	no	Dr. J. Thighpen, Greenville.
" 15, 16, and 17.	Georgia State Med. Soc.	Savannah.	175	yes	no	no	yes	Dr. Wm. Duncan, Savannah.
" 16, 17, and 18.	Mississippi State Med. Soc.	Greenville.	125	yes	yes	no	no	Dr. S. R. Denn, Greenville.
" 21.	South Carolina State Med. Soc.	Charleston.	75	yes	no	no	yes	Dr. H. D. Fraser, Charleston.
" 21, 22, 23, and 24.	Texas State Med. Soc.	Houston.	850	yes	yes	no	no	Dr. J. J. Burroughs, Houston.
" 21, 22, 23, and 24.	Amer. Surg. Assoc.	Washington, D. C.	100	no	no	no	no	J. S. Billings, Surg. U. S. A., Washington, D. C.
" 21, 22, 23 and 24.	Louisiana State Med. Soc.	New Orleans.	100	yes	no	no	..	Dr. F. W. Parham, N. Orleans
" 22, 23 and 24.	Arkansas State Med. Soc.	Little Rock.	125	yes	yes	no	no	Dr. L. P. Gibson, Little Rock
" 23.	Cal. Electric State Med. Soc.	Oakland.	100	yes	no	no	no	Dr. H. M. Logan, San Francisco.
" 28, 29, 30 and May 1	Amer. Med. Assoc.	New Orleans, La.	2,000	yes	no	no	no	Dr. W. H. Watkins, New Orleans.
May 12.	Missouri State Med. Soc.	St. Joseph.	250	yes	no	no	no	Dr. H. H. Middlecamp, Warrenton.
" 12 and 13.	Amer. Climatological Assoc.	New York, N. Y.	40	no	no	no	no	Dr. J. B. Walker, Phila., Pa.
" 12 and 14.	Indiana State Med. Soc.	Indianapolis.	500	yes	yes	no	no	Dr. E. S. Elder, Indianapolis
" 19, 20, and 21.	Illinois State Med. Soc.	Springfield.	800	yes	yes	no	no	Dr. B. M. Griffith, Springfield
" 20 and 21.	West Virginia State Med. Soc.	Weston.	50	yes	no	no	no	Dr. A. A. Kunst, Weston.
" 21.	N. Carolina State Med. Assoc.	Durham. . . . .	..	..	..	..	..	..
" 20, 21, and 22.	Iowa State Med. Soc.	Cedar Rapids.	250	yes	yes	no	no	Dr. H. Ristine, Cedar Rapids
" 26 and 27.	Wisconsin Homœop. Med. Soc.	Janesville.	50	yes	no	no	no	Dr. E. W. Beebe, Milwaukee
" 26, 27, and 28.	Nebraska State Med. Soc.	Grand Island.	100	yes	yes	no	no	Dr. Emil Christiansen, Grand Rapids.
" 27 and 28.	Connecticut State Med. Soc.	Hartford.	200	yes	no	no	no	Dr. L. B. St. John, Hartford.
" 27, 28, and 29.	Pa. State Med. Soc.	Scranton.	250	yes	no	no	no	Dr. J. F. Ernhart, Scranton.
June —.	Amer. Laryngological Soc.	Detroit, Mich.	80	no	no	no	no	Dr. D. Bryson Delavan, New York, N. Y.
" 2.	Wisconsin State Med. Soc.	Milwaukee.	100	yes	yes	no	no	Dr. J. T. Reeve, Appleton, Wis.
" 2 and 3.	Maine State Med. Soc.	Portland. . . . .	..	..	..	no	no	Dr. C. D. Smith, Portland.
" 3, 4 and 5.	Ohio State Med. Soc.	Dayton.	250	yes	yes	no	no	Dr. J. M. Deaver, Dayton.
" 4 and 5.	Minnesota State Med. Soc.	St. Paul.	125	yes	no	no	no	Dr. D. Leasure, St. Paul.
" 9.	Delaware State Med. Soc.	Rehoboth.	75	yes	no	no	no	Dr. G. W. Marshall, Mulford
" 9 and 10.	Mass. State Med. Soc.	Boston.	700	yes	no	no	no	Dr. F. W. Goss, Roxbury, Boston.
" 9 and 10.	New Jersey State Med. Soc.	Long Branch.	300	yes	yes	no	no	Dr. S. H. Hunt, Long Branch
" 9, 10 and 11.	Oregon State Med. Soc.	Portland.	50	yes	no	no	no	Dr. E. P. Fraser, Portland.
" 10 and 11.	Michigan State Med. Soc.	Port Huron.	150	yes	yes	no	no	Dr. H. R. Mills, Port Huron.
" 11.	R. I. State Med. Soc.	Providence.	100	yes	yes	no	no	Dr. H. S. Olney, Providence.
" 16.	Colorado State Med. Soc.	Denver.	100	yes	yes	no	no	Dr. W. E. Wilson, Denver.
" 16 and 17.	N. H. State Med. Soc.	Concord.	125	yes	no	no	no	Dr. W. G. Carter, Concord.
" 17.	Amer. Neurological Assoc.	New York, N. Y.	40	no	no	no	no	Dr. G. M. Hammond, New York, N. Y.
" 25 and 26.	Vermont State Med. Soc.	Bellows Falls.	100	yes	no	no	no	Dr. E. S. Albee, Bellows Falls
July 14.	Amer. Otological Assoc. . . . .	.. . . .	25	yes	no	..	..	Dr. J. J. B. Vermyne, New Bedford, Mass.
" 15 and 18.	Amer. Ophthalmological Soc. . . . .	.. . . .	85	no	no	..	..	Dr. O. F. Wadsworth, Boston, Mass.
Sept. —.	Virginia State Med. Soc.	Alleghany Springs.	125	yes	no	no	yes	Dr. L. B. Edwards, Richmond.
" 8 and 9.	N. Y. Homœop. State Med. Soc.	Grove Spring, Keuka Lake.	75	yes	no	no	yes	Dr. J. L. Moffatt, Brooklyn, N. Y.
" 15, 16, and 17.	Amer. Gynecological Soc.	Washington, D. C. . . . .	..	no	no	no	no	Dr. F. P. Foster, New York.
Oct. 6.	Med. Assoc. Dist. of Columbia.	Washington. . . . .	..	no	no	no	no	Dr. L. Tyler, 1206 G st., Washington.
Feb. 2, 3, and 4, 1886.	New York State Med. Soc.	Albany.	300	yes	no	no	no	Dr. S. B. Ward, Albany.

American Druggist

Vol. XIV. No. 6.

NEW YORK, JUNE, 1885.

Whole No. 132.

(ORIGINAL COMMUNICATION.)

PHOTOGRAPHY AS APPLIED TO THE STUDY OF BOTANY.

BY LAURENCE JOHNSON, A.M., M.D.

Professor of Medical Botany in the Medical Department of the University of the City of N. Y.



PHOTOGRAPHY during the past few years, has grown into popular favor as an amusement for idle hours, one that can be highly enjoyed in summer holidays, and the camera has, with many, taken the place of the rod and gun.

This popularization of the use of a strictly scientific instrument is due mainly to improvements in photographic processes, which enable one, with no chemical knowledge and little manipulative skill, to produce at least passable pictures. Following these improvements have naturally come into the market, inexpensive portable apparatus

of them, with slight modifications, may be made to serve our purpose.

The camera is commonly made to receive a 4x5 or a 5x8 inch plate, these being the sizes of pictures most popular among amateurs. Of the two, the larger size is preferable, since, without being much heavier, it enables one to take either large or small pictures as desired, for the 5x8 inch plate-holder may be readily arranged to receive smaller plates also.

For all ordinary purposes the simple camera shown in Fig. 3 will be sufficient. It consists of two boxes connected by a bellows; the front box, bearing the lens, is securely fastened to a light but strong frame, which, at the time of use, is screwed upon the tripod. Along this frame moves the second box, having at its base a binding screw, by which it may be securely fixed at any desired point. The back of this box is closed by a frame inclosing ground glass. In some cameras this frame rests upon two pegs at the base, from which it is removed and laid aside after focussing the lens; in others it is held by hinges, permitting it to be turned down out of the way after focussing. Of the two modes of attaching the ground glass, I prefer the latter as being more convenient and less conducive to accidents.

This is the simplest and cheapest form in which a camera can be made, and, provided it be well made, it will answer the purposes to which I shall invite the reader's attention. The boxes and bellows must be absolutely light-tight, so that when the ground glass is removed and the plate-holder inserted in its place, not the faintest ray can anywhere penetrate, save through the lens. The movable portion of the camera should be capable of easy, steady, and accurate motion. Such cameras are commonly made of light, well-seasoned wood, and are painted of a dead black within, while the outside is either blackened or stained.

If I were sure the reader could always be satisfied with the absolute necessities of life, I might stop here in the description of cameras and not mention the more costly, luxurious ones. But as I write mainly of my own expe-

rience, I assume that others will have similar experiences, and after the necessities, yearn for the luxuries, hence I shall make brief mention of some of them.

First of all, there is the *swing-back* (Fig. 5). With the camera described above, one can make good pictures of objects at right angles to the plane of vision, provided the field be limited and the lens be focussed upon or near its centre; but if a portion of the object present receding lines, there will be more or less distortion. This distortion is in a great measure prevented by the swing-back, a movable part of the rear box of the camera, by means of which the portion of the plate receiving the image of the receding object is carried a short distance farther from the lens, and thus this section of the picture made a little larger than it otherwise would be, and hence better proportioned. In photographing buildings at short range, the swing-back is absolutely necessary, since the upper parts are considerably farther away from the camera than the lower, and would be distorted in the picture unless corrected. So in photographing plants at short range—and most plants must of course be photographed in this manner—I have often found the swing-back very convenient, if not almost indispensable. Hence I would advise the beginner in photography to obtain a camera with this attachment; the slightly increased expense is of small mo-

tus of reasonably good quality. Still, to the great mass of people, photography appears as mysterious and difficult as ever; and even many skilful amateurs seem little impressed with its value save as a means of preserving mementoes of persons and places.

Having used the camera considerably in the study of medicinal plants, I shall endeavor to point out in a few short articles how it may be made useful to students, especially of medicine and pharmacy.

It requires no argument to prove that plants cannot be satisfactorily studied in the mutilated condition in which we find them in drug stores. Even well-preserved herbarium specimens are but poor substitutes for living plants. Careful drawings assist materially, but they are made only by skilful hands, and even then often fail to more than suggest the action, as artists call it, of the living specimen. In this last respect, photography leaves nothing to be desired; as also in affording faithful representations of delicate and changeable structures.

First of all we require to consider the question of

APPARATUS.

Most manufacturers of photographic apparatus, who cater to the tastes of amateurs, put up complete outfits, comprising everything necessary to the production photographic prints. Such outfits commonly consist of a camera, with portable tripod, plate holders, plates, developing trays, and the necessary chemicals for developing the plates and printing proof, together with a light box or telescopic case, in which the whole may be carried in the hand. Those at present furnished by reliable manufacturers are marvels of convenience and cheapness, and almost any

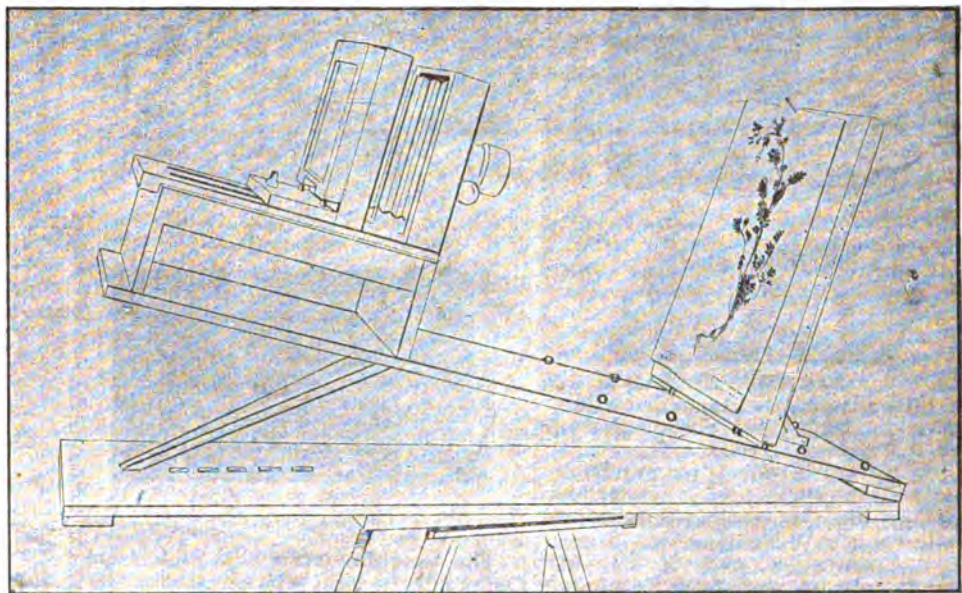


FIG. 1.—Apparatus for photographing plants.

rience, I assume that others will have similar experiences, and after the necessities, yearn for the luxuries, hence I shall make brief mention of some of them.

First of all, there is the *swing-back* (Fig. 5). With the camera described above, one can make good pictures of objects at right angles to the plane of vision, provided the field be limited and the lens be focussed upon or near its centre; but if a portion of the object present receding lines, there will be more or less distortion. This distortion is in a great measure prevented by the swing-back, a movable part of the rear box of the camera, by means of which the portion of the plate receiving the image of the receding object is carried a short distance farther from the lens, and thus this section of the picture made a little larger than it otherwise would be, and hence better proportioned. In photographing buildings at short range, the swing-back is absolutely necessary, since the upper parts are considerably farther away from the camera than the lower, and would be distorted in the picture unless corrected. So in photographing plants at short range—and most plants must of course be photographed in this manner—I have often found the swing-back very convenient, if not almost indispensable. Hence I would advise the beginner in photography to obtain a camera with this attachment; the slightly increased expense is of small mo-

ment compared with the added convenience and efficiency of the instrument.

The front or face of the camera bears the lens through which the light enters, and works its wonders upon the sensitive plate. As this is the most important part of the whole apparatus, it requires more than a passing mention. The lens furnished with the ordinary amateur outfit is what is known as a single combination lens that is, one composed of a single piece each of flint and crown glass cemented together. This is mounted in a metal tube which screws into a collar attached to the front of the camera. A little in advance of the lens is placed a diaphragm which admits light through only the central portion of the lens, thus reducing the spherical aberration, but not correcting it entirely. Such a lens does fair work in landscape photography, where slight distortion passes without notice, but for the work we are considering, it is scarcely appropriate. We wish all

As to the plate-holder (Fig. 6) little need be said, since one will naturally take those furnished with his outfit. I have, however, found great satisfaction in those having one side of the slides silicated (Fig. 11) so as to admit writing notes of the subject, exposure, etc. This is of ten a very great convenience, and may be the means of preventing the exposure of a plate a second time.

Regarding the tripod (Fig. 8), it is only necessary to say that it should, as a first requisite, have firmness; and next, be as light as possible.

light being intercepted by a blackened tin shade. A wooden box with a plane of ruby glass set in one side, in which a candle or kerosene lamp may be set answers admirably. Small holes bored on one side near the base and a large one at the top, will afford sufficient air for combustion, and prevent overheating. Of course, these holes must be so shaded as not to permit the escape of white light. The large one at the top, for instance, may be covered by a tin can with small holes punched on one side in the manner of old-fashioned tin-lanterns. A little ingenuity will thus enable one to supply himself with the requisite at very little cost.

A negative-rack (Fig. 12), on which to drain and dry negatives, a printing-frame (Fig. 13), and a broad, soft brush (Fig. 14) should also be included in the outfit.

In photographing small plants or parts of plants, I have found the apparatus shown in Fig. 1 very convenient. Two boards, three and one-half feet long and ten inches wide, are united by hinges at one end. Near

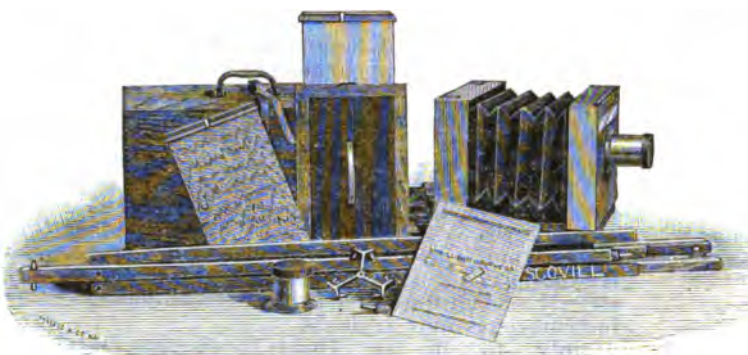


FIG. 2.—Camera, plate-holder, tripod, etc., as furnished in ordinary amateur outfits.

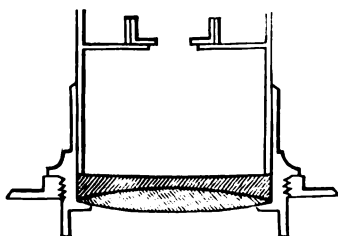


FIG. 3.—Single combination lens.

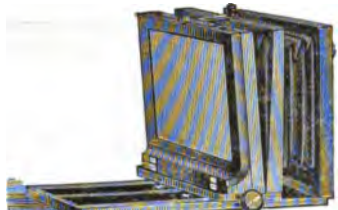


FIG. 5.—Swing-back camera.



FIG. 10.—Developing dish.

the lines to appear without distortion, and the objects as nearly as possible of their proper proportions. These ends can only be attained in double or triple combination lenses which are necessarily more expensive than the single ones. Without attempting a description of such lenses, it will suffice to mention some which, from personal experience, I can confidently recommend. The Dallmeyer and the Morrison lenses are certain to give satisfaction. With the latter I have made a photograph in sections through an arc of 180°, the different sections matching perfectly without the slightest signs of distortion. But these lenses are expensive, and, on this account, may not be desired. In this case I can recommend the imitation Dallmeyer as one very satisfactory in its workings, and as good a cheap lens (\$8.00 or \$9.00) as I am acquainted with. It is a very rapid lens, that is, requiring very short exposure, and when a small diaphragm is used, reasonably free from distortion.

To conclude this part of the subject, then, I would advise the student to procure an "outfit" complete, whether for 4x5 or 5x8 plates, since the whole outfit can be procured more cheaply this way, and then add to it a Dallmeyer, Morrison, or imitation Dallmeyer lens, being guided in his choice of the lens by the condition of his purse.



FIG. 8.—Tripod.



FIG. 7.—Silicated slide of plate holder.

The focussing-cloth, with which one shuts out the light when focussing the lens, may be of any light-tight material; it is, however, commonly of black rubber-cloth.

For the process of developing plates there are commonly supplied with amateur outfits two or three japanned iron pans (Fig. 10), which answer for the purpose, though those made of gutta-percha or hard-rubber are much more serviceable. Sooner or later the iron rusts beneath the varnish, causing the latter to flake off. In this case one can temporarily repair the damage by scraping away the rust and applying another coat of varnish; but when much rusted, it is better to throw them away and get new ones.

The development of dry-plates after exposure as well as fitting them into the plate-holder before exposure, must be done by ruby-red light. Lanterns of various forms have been devised to afford such a light, one of which is shown in Fig. 11. Such a lantern is very convenient, but not absolutely essential. I commonly work with an ordinary Argand gas-burner having a ruby chimney, the upward rays of white

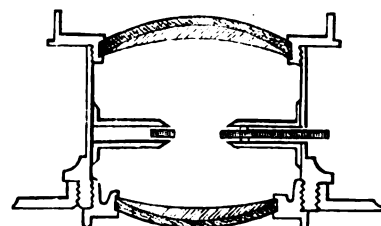


FIG. 4.—Double combination lens.

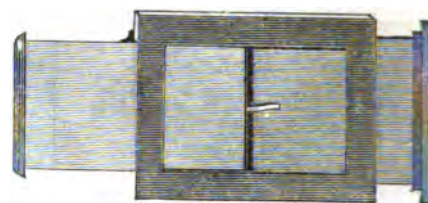


FIG. 6.—Plate holder.



FIG. 9.—Lens tube and cover.

the other end a stick, hinged to the upper board, rests upon the lower, fitting into holes so as to permit raising or lowering to any angle desired. On the free end of the upper board is erected a frame to hold the camera, the remainder of the board being occupied by small screw-eyes placed in two rows at equal distances from each other. A frame, one and one-half by one foot, covered with gray drilling—a common canvas stretcher does admirably—with two screw-eyes at the bottom, and a wooden rod to pass through the screw-eyes of the board and those of the frame, complete the apparatus. To the bottom of the frame, however, there should be attached a block (not shown in the cut), resting on the board and serving to keep the frame always in a perpendicular position.

In using the apparatus, the plant to be photographed is attached to the cloth on the frame by pins or thread, and then the latter is placed at the desired distance from the camera, and fixed by sliding the rod through the screw-eyes.

(To be continued.)

[ORIGINAL COMMUNICATION.]

FILTERING SYRUPS.

MUCH trouble is usually found in filtering syrupy and mucilaginous preparations by the pharmacist, and he is frequently under the necessity of "repacking the filter" or wait an indefinite length of time for his preparation to filter, thereby causing a great loss by evaporation of all the volatile parts of the preparations. I have had a tin filter made which is very simple, but which works very rapidly, and entirely satisfactorily. It is made about two inches in diameter, larger than the top diameter of the ordinary half gallon glass funnel, cylindrical, with sides about eight inches high, provided with a tight-fitting cover. On the bottom is a flange about one inch wide, made to conform to the inside of the top of the glass funnel, and inside of this flange the bottom is cut out and fine strainer cloth is soldered over it, with two wires running transversely across under the strainer cloth to support it. I now take fine river sand and thoroughly wash it, and after drying it, put about one inch over the bottom of the filter, place the filter on the funnel, put the funnel on the filter rack, and commence operations. Cough syrups, made up largely from simple syrup with fluid extracts, may be rapidly filtered and satisfactorily done, as well

cally as a substitute, there will be no longer any good excuse for using a dangerous compound.—*Chem. News*.

Improved Powdered Meat.

G. DANNECY, of Bordeaux, was the first who obtained, in 1872, a French patent for preparing powdered meat.

This product, however, like several others of a similar character, labored under the disadvantage of being prepared from fresh meat, and, therefore, liable to contain, and, in fact, not unfrequently containing, the germs of tape-worm, which often resulted from the eating of this kind of food.

Mr. P. G. Dannecy, of Rio de Janeiro, the son of the above mentioned, now publishes the statement that, for some years past, he has modified his father's process by employing enough heat to destroy these germs. The operation is conducted as follows:

The meat is immersed and left for at least one hour in about ten times its volume of boiling water, containing 1 per cent of salt. It is then taken out, allowed to cool, and cut into thin slices (about 3 to 4 millimeters, or $\frac{1}{8}$



FIG. 14.—Dust brush.



FIG. 12.—Dressing rack.

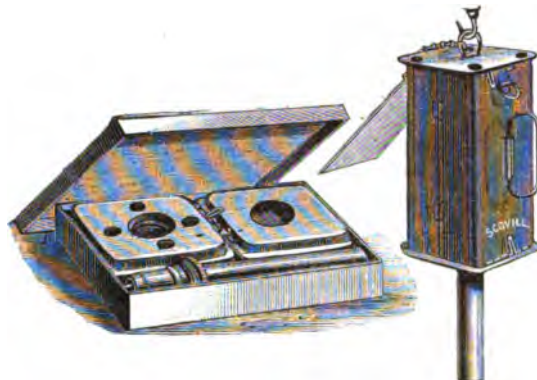


FIG. 11.—Lamp.

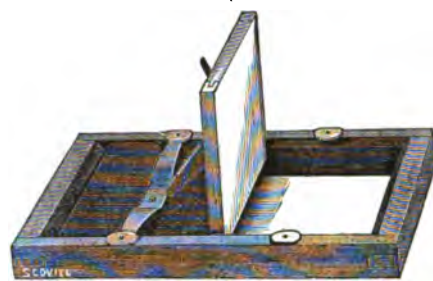


FIG. 13.—Printing frame.

as all other preparations of like character. Many times, in filtering quite a quantity of a preparation, the filter paper would have to be renewed several times, while this simple device will do the work as satisfactorily in half the time. D. S. WHITE.

FLANDREAN, DAKOTA.

A Harmless Soldering Mixture.

SOME time ago, when experimenting with various chemical substances which might possibly be used for soldering the tin cans in which fish, fruit, and vegetables are now extensively put up, I was led to interrupt my experiments on learning of a mixture which had been suggested for the purpose, which certainly, it seemed to me, satisfied all sanitary requirements, and which was reported to work well in actual practice. As the mixture has been recently patented, its composition is no longer a secret, and I am therefore at liberty to state that it consists of lactic acid and glycerin, the best proportions being one pound of each of these substances with eight pounds of water.

The inventor of the mixture is Abr. C. N. Waite, of Littleton, Mass., but I do not know whether the patent was issued to him or to the Avery Lactate Company. I am informed that the mixture has been tried with success by Messrs. E. T. Cowdry & Co., in canning fish. How many accidents have really resulted in the past from the use of chloride of zinc I do not know, but no one can deny that there is possible danger in its use, and if a harmless substance, such as that mentioned above, can be made to work practi-

inch thick). These pieces are dried upon cloths in a well ventilated drying oven, at a temperature of 40 to 50 degrees. After three hours they are sufficiently dry to be rubbed to powder, which may be done in a marble mortar with a wooden pestle.—After *Rép. de Pharm.*, 1885, 52.

The Greek Government and the Quinine Trade.

THE frequency of intermittent fever in Greece led to a proposal on the part of the Greek Government to take the matter in their own hands, and they have submitted to the Parliament a bill to the following effect: 1. The Government shall be entitled to purchase quinine sulphate of the best quality from foreign manufactories, and to retail the same at cost price, to any one requiring it. 2. The retail price, which would vary according to the market price of the article and the cost of carriage and retailing, would be fixed every three months, and the result published in the *Official Gazette*. 3. The cost involved to be borne by the Home Ministry, and the money received to go into the Government Exchequer. 4. The purchase and distribution to be effected by the military authorities. It is stated that the Greek consuls in Germany, France, Austria, and Italy are requested to procure samples of quinine manufactured in those countries, and that these are to be submitted to a Commission of physicians and chemists. The pharmacists in Athens, as is natural, are not in favor of the bill, and have petitioned against it.—*Chem. and Drugg.* March.

ASSAY OF COMMERCIAL PEPSINS.*

THE author first prepared several specimens of pepsin himself, employing various methods:

1. *Scheffer's method*.—The lining membrane of the stomach of a freshly slaughtered pig was dissected off, chopped moderately fine, and macerated in one-half gallon of acidulated water ($7\frac{1}{2}$ parts of hydrochloric acid and 500 parts of water), with frequent agitation for seven days. The solution was then poured off, and enough chloride of sodium added to saturate it. The dense curdy precipitate floating on top after twenty-four hours was skimmed off, strongly pressed, after a few days removed, then triturated with 480 grains of sugar of milk, and dried.

One grain of this was able to digest 97 grains of egg-albumen.

A saccharated pepsin prepared from this, by mixing 1 part with 3 parts of sugar of milk, was found of such a strength that one grain digested 68 grains of egg-albumen.

2. *Same process*.—But this was modified by chopping the whole stomach moderately fine. The yield was larger than in the previous operation, and the pepsin was more active, 1 grain of the product digesting 104 grains of albumen. And on further diluting 1 part of the pepsin with 3 parts of sugar of milk, 1 grain of the product digested 71 grains of albumen.

3. *Jensen's Process*.—The stomach

was chopped moderately fine, and digested in one-half gallon of acidulated water for six hours at a temperature of 45° C. (113° F.). The peptonic solution thus produced was poured off, allowed to settle, and then filtered. The pale, straw-colored filtrate was evaporated slowly at a temperature of 45° C., until it was of a syrupy consistency, then transferred to a porcelain slab, dried, and scaled off. The resulting preparation was rather unsatisfactory, for on exposure to air for a short time, it absorbed moisture, forming a tough gelatinous mass.

1 grain of this pepsin was found to digest 108 grains of albumen. And on diluting the pepsin with 4 parts of sugar of milk, 1 grain of the product digested 54 grains of albumen.

A saccharated pepsin thus prepared does not keep well. A sample that had been kept but two weeks, wrapped in paper, was damp, badly caked, and had a very disagreeable odor, while other samples, kept in the same manner, but made by different processes, were unchanged.

These three samples and others purchased in the market were then subjected to the pharmacopoeial test. As the pharmacopoeia gives no directions for the division of the egg albumen, the author adopted the following method in each case. Fresh eggs were dropped into boiling water and allowed to remain ten minutes; they were then removed, cooled, and the whites freed from the shells, membrane, and yolks. The whites were then ground together

* Abstract of a Thesis presented to the Massachusetts College of Pharmacy, 1886, by CHARLES EVERETT COOMBS, Ph.G.

thoroughly in a mortar and pressed through a sieve of twenty meshes to the linear inch. This egg albumen was prepared fresh for each experiment.

For convenience and easy comparison, the author divided his samples into three classes:

1. The saccharated pepsins.
2. The scale and stronger pepsins.
3. The digestive compounds of pepsin.

The testing of the samples was carried out in a specially constructed apparatus, being a water-bath with false bottom of wire-netting, upon which the test-vials (6 oz. wide-mouths) rested. Each was closed with a cap of white wrapping-paper held in place by a rubber band. Into each bottle, properly labelled, were weighed, first, 507 grains of acidulated water, and to this was added 1 grain of saccharated pepsin. Next, 75 grains of prepared egg-albumen were added, the bottles covered, placed in the water-bath, and kept at 38°-40° C. (100°-104° F.) for six hours, being shaken in intervals of twenty minutes. The contents of each bottle were then transferred to a close strainer, and the undigested albumen in each case was thoroughly washed, drained, and all of the liquid pressed out until the albumen was as near its original condition as it was possible to get it. The difference in weight (that is, the loss it had undergone) was taken as the amount digested by the sample.*

1 grain each of the following fifteen samples of *saccharated pepsins*, made to act during six hours upon 75 grains of egg-albumen, digested the stated number of grains:

No.	Grains	No.	Grains
1	75	8	65
2	72	9	62
3	71	10	57
4	71	11	54
5	71	12	54
6	68	13	46
7	66	14	43
		15	None

There was a great difference in the action of these samples; some of them began to act in a few minutes, while others were slower. Two samples, in particular, displayed but slight digestive power till the last two hours, and then were very active, so that their final result compared favorably with the others.

Two samples of No. 4 (of the same manufacturer) were tested at the same time. One was seven years old, while the other was comparatively fresh, yet their digestive power varied only 3 grains.

The author next took up the samples of *scale and stronger pepsins*. And here he obtained results which induce him to discredit the claims made by the manufacturers that their products would digest from 200 to 1,000 grains, respectively, of egg-albumen.

He prepared a saccharated pepsin, by triturating 1 part of the stronger pepsin with 3 parts of sugar of milk, and 1 grain of this digested 71 grains of egg-albumen. Yet 1 grain of the stronger pepsin itself, which should have been supposed to have four times the strength of the trituration prepared from it, and therefore should have digested 284 grains, only digested 104 grains of albumen.

The author found that *the finer the powder the more active is the pepsin*. Samples 1 and 5 in the following list were of the same make, and from the same lot No. 1 was in very fine powder, and 1 grain digested 142 grains of

albumen, while No. 5, being in coarse powder, only digested 108 grains.

The test was made as follows: 1 grain of pepsin was mixed with 1,000 grains of acidulated water, and 500 grains of prepared egg-albumen added to it. The larger amount of water was taken in order to cover the albumen. The manipulation was the same as before. After six hours, however, but slight action was displayed by any of the samples. A new series was then prepared, in which only 507 grains of acidulated water and 200 grains of albumen were used, and this time the results were better.

One grain each of the following 12 samples of *scale and stronger pepsins*, made to act during six hours on 200 grains of albumen, digested:

No.	Grains.	No.	Grains.
1.	142	7.	107
2.	130	8.	107
3.	120	9.	104
4.	116	10.	102
5.	108	11.	97
6.	108	12.	86

The digestive compounds of pepsin also examined by the author, which comprise pills and solutions of pepsin, may be omitted here, as the amount claimed by the makers to be present is not always indicated.

A wine of pepsin made from sample No. 1 of the saccharated pepsins above enumerated, and made by the following formula, was found, contrary to expectation, remarkably active:

Saccharated Pepsin....256 grains.
Distilled Water..... 2 fl. oz.
Hydrochloric Acid.... 24 min.
Glycerin..... 1 fl. oz.
Sherry Wine, enough to 16 fl. oz.

One fl. dchm. of this was mixed with 507 grains of acidulated water and 100 grains of prepared albumen. After six hours it had digested 73 grains of the latter.

Of 40 samples of pepsin and their preparations which the author examined, 4 were devoid of peptic action altogether, and of the saccharated pepsins claiming to be "pharmacopoeial," 80% answered to the official requirements.

BORIC ACID.*

THE author first gives an account of the Italian boric acid industry, and then treats of the American borax sources and their effects upon the importation of the foreign article. We omit the first portion of the paper, and give the more interesting portions of the remainder as follows:

The importation of boric acid into the United States has formerly been very large. The well-known firm of Chas. Pfizer & Co., of New York, has had, previous to 1883, an annual importation of some 200 casks. Boric acid has been used to an enormous extent in the manufacture of borax. At present, however, large quantities of pure borax are obtained from natural sources in this country. It was as early as 1856, when Dr. John A. Veatch discovered borax in Tehama Co., Cal., and since that time the importation of foreign boric acid has steadily decreased and almost entirely ceased. As is well known, all the borax sold in former years in the markets was an artificial combination of boric acid with soda, and the borax trade was a monopoly. Now, in California, we find it in immense quantities in what is called *Clear Lake*, about thirty-six miles from the Pacific Ocean and one hundred miles north of San Francisco, among volcanic rocks. At the lower end of this lake we find sulphur deposited, covering many acres, and from ten to twelve feet in height. A great part of this sulphur has been sold at large profit. By the side of this sulphur-tank is a spring, from

which runs a small stream down into Clear Lake. This spring is a saturated solution of boric acid in water, and by simple solar evaporation large quantities of the acid are obtained, and then, by recrystallization, a product is obtained equal to that made in any laboratory. This spring probably has no equal in America or abroad, nothing like it having been recorded. Close beside it is another similar one, but it holds in solution certain impurities, such as magnesium, aluminium, calcium, etc., and to make pure boric acid from it, very careful manipulation is required.

In the National Dispensary, 3d edit., 1874, p. 1,386, we find the following passage: "Previous to 1880, the importation into the United States of borax amounted to about 3,500 lbs. annually, but in 1880 and in 1882 it exceeded 15,000 lbs., and in 1883 over four and one-third million pounds of boric acid were imported.

But this statement does not tally with other authorities. For instance, the U. S. Dispensary, 15th ed., 1883, says: "The importation of borax, which formerly amounted to from 600,000 to 1,000,000 pounds annually, has practically ceased, and the American product has been largely exported."

Now, in the new Tariff which was enacted by Congress in the early part of 1883, and which went into effect on July 1st, 1883, a duty of five cents per pound is placed on pure boric acid, four cents on crude boric acid, and three cents per lb. on borate of lime. These heavy duties have excluded these articles from importation, and cause the home demand to be supplied by the Californian product. These duties were supposed to be just and necessary to protect the American industry, but this is untrue as will be seen from the following extracts:

"Borax is so abundant at Columbus, Nevada, that it sells for four cents a pound, at which price it still affords a fair profit. When first produced it brought 30 cents."—(*Boston Journal*.)

"And yet it was considered necessary to protect it by a duty on imported borax, so that the American labor producing it might not be obliged to compete with pauper labor abroad."—(*Boston Herald*.)

The author then discusses the preparation, properties, reaction, etc., of boric acid, and finally appends the following table, obtained from the U. S. Bureau of Statistics, which bears out his statement about the importation of the article.

Statement showing the Quantity and Value of imported Boric Acid, entered for consumption in the U. S., with the rate of duty, and the amount of duty collected thereon, from 1867 to 1884 inclusive:

Year ending June 30.	Boric Acid lbs.	Value \$	Duty per lb.	Revenue derived from duty.
1867	770,756	73,396	5 cents	38,587.80
1868	293,993	23,845	5 "	12,199.65
1869	983,033	109,974	5 "	49,401.65
1870	1,166,145	178,806	5 "	58,307.25
1871	1,204,049	185,477	5 "	60,202.45
1872	1,103,974	191,575	5 "	55,198.70
1873	1,222,006	255,186	free	none
1874	233,955	52,752	"	"
1875	41,742	6,280	"	"
1876	137,518	15,711	"	"
1877	107,468	11,231	"	"
1878	178,798	14,925	"	"
1879	306,462	21,888	"	"
1880	243,733	18,473	"	"
1881	187,053	15,771	"	"
1882	536,334	71,343	"	"
1883	4,334,432	580,171	"	"
1884	a 42,900 b 1,612	4,193 301	4 cents 5 "	1,716.01 80.53

* a denotes the commercial, b the pure acid.

† These are the figures in the original document. We should have expected \$1,716.00 and \$80.00 respectively.

* This is, indeed, the usual method followed by nearly all experimenters, but it is naturally quite liable to give discordant results, as there is never any absolute certainty that the condition (moisture) of the albumen before and after the experiment is the same. Probably the only thoroughly safe method is that of Stutzer (see our last number, p. 84), in which the nitrogen is determined in the albumen. Nevertheless, a series of assays made uniformly by the process detailed by the author gives practically useful results.—Ed. A. D.

* Abstract of a thesis presented to the Massachusetts College of Pharmacy, 1885, by FRANK H. MORGAN, Ph.D.

[ORIGINAL COMMUNICATION.]

THE ARCHITECTURE AND ARRANGEMENT OF KELLEY & DURKEE'S DRUG-STORE.

(Continued from page 82.)



One of the window cases.

of the fluid extracts and elixirs not in active request in drawers; the section marked "drawers for bottles," on the plan of details on page 85, is so used; each drawer will contain twenty pint and five four-ounce bottles. In order to facilitate finding the preparations, the drawers are all numbered and referred to on an alphabetical list of con-

N the rear of the prescription counter an opening has been made in the wall for placing the soiled dishes, in order that a boy may remove them from the other side for cleansing, without being in the way of the dispensers, while doing so; the opening is closed by a small sliding-door. The chemicals, syrups, tinctures, extracts, etc., which are in greatest demand are placed directly back of the prescription counter. It was necessary to put many

by the black marble back of it; the face of the arch is Victoria red, deeply cut into polished diaper figures, a new and effective way of treating marble work. A narrow line of black separates the Victoria red from rosette-carved Italian griotte and a moulding of black separates the white bevelled onyx of the arch from the Victoria red—the inside of the arch is a highly-polished red marble, a little lighter than the face of the arch, but contrasting strongly with the delicate cream of the Italian Sienna, which forms the mirror frame to the bevelled plate mirror. To introduce the ice and syrups, the mirror is swung backwards until caught by hooks which hold it in place. The carved line of marble of which the capitals of the column form a part, greatly add to the general beauty of the design. The columns are supported on a moulded base of black, which also extends across the body of the apparatus, and on which names of the syrups are engraved and gilded. The syrup gates are in a line of very dark Italian griotte, excepting the end gates, which come from block of Pyrenees green, forming a part of the base to the columns.

The gallery is principally used for surplus stock and those goods not often in demand; as it is found difficult to arrange some of the stock in the gallery so as to be attractive, several of the sections are about to be draped inside the glass doors with thin lemon-gold curtains, so as to partly conceal the contents. The entrance to the basement stairs is through the fly-doors in the rear of the prescription counter. A portion of the landing, two steps lower than the main store, is used for a marble wash-bowl and other toilet arrangements. To the left of the landing is a sink provided with hot and cold water for washing the soiled dishes. The fume-closet in the basement at the foot of the stairs is provided with an excep-



Side cases and counters and the gallery.

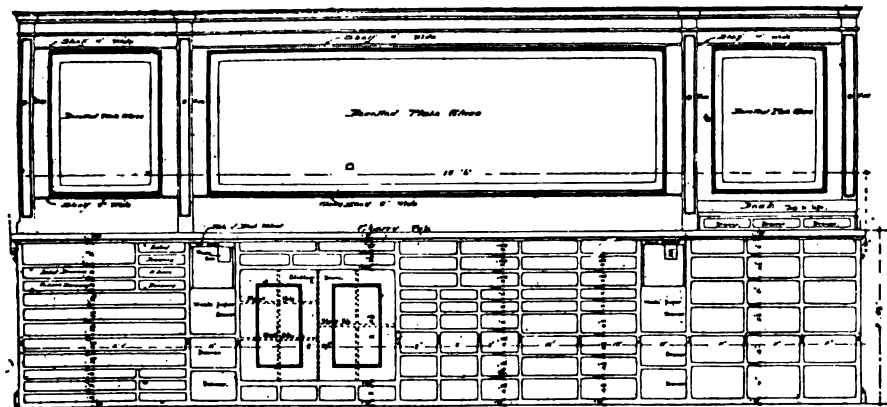
tents. A card catalogue, by which ready reference is made to articles of special interest in pharmaceutical journals, occupies the drawers above the ones last mentioned.

The alcove room in the rear of the main store is used as follows: chemicals and alkaloids the closets on each side of the entrance; on the right side of the room two comfortable spring-beds are placed, one above the other, closing in the daytime, something the same as the upper berths in modern sleeping-cars, wardrobes for coats, hats, etc., and the library, protected by glass doors, occupy the remaining space. Several leaves or shelves are arranged to slide out on rests for use as tables or counters in the daytime; at night a carpet is placed on the tile floor for comfort, and a curtain separating it from the store may be drawn. A speaking-tube to basement and front door, two electric call boxes for messengers, and a telephone are placed conveniently.

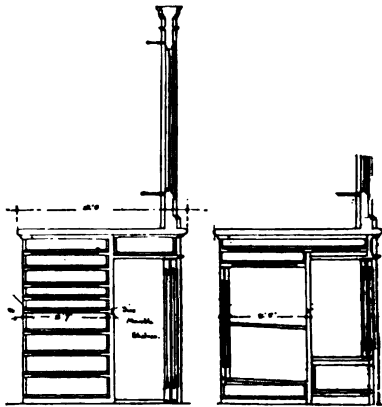
The soda fountain is situated in the corner nearest the front door, and is especially unique, Messrs. Kelley & Durkee having had some ten or twelve designs submitted by different architects, artists, and apparatus-makers. The one used was drawn by Mr. Rinn, the artist decorator of Boston (see July number). The draught arms, of which there are five, spring from a beveled Mexican onyx, beautifully mottled with bluish-gray, the columns supporting the arch are of California white onyx, brought into contrast

tionally strong draught by being run into and part way up the boiler flue.

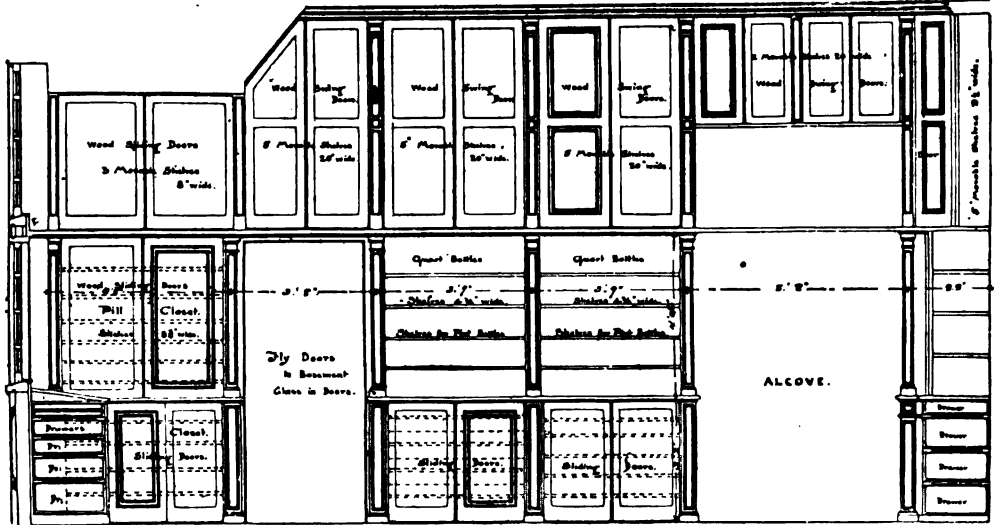
The closet has glass swinging-doors and a variety of gas, water, and steam connections. The cement floor is covered with sheet lead, slanted in such a manner that any liquid accidentally spilled will flow directly into the sewer. The large steam kettle is placed in the closet in order that the odor and vapor may be carried away—a slide in the counter or table to the fume-closet covers the still when not in use, so all the room may be available when needed. A Prentiss' still, with steam attachments, is also used inside the closet. The shelves near are used to hold the following apparatus: still-head, large four-foot Remington condenser, Sparrow mixer, Harris sifter, sieves, hot-filter tank, etc. The laboratory table (not shown) has the top of maple plank, and is about eight feet long and four feet wide, and is fitted with drawers and closets. The permanent furniture of the counter consists of a desk, an Enterprise drug-mill, and a Wiesnegg furnace. Besides the table, three large swinging leaves in other parts of the room, supported on strong legs, give some sixty more feet of room. Over the desk near the door at which the goods are received, the reagents and testing-apparatus are kept. The remaining things in the room are those which are generally seen in laboratories, such as percolators, capsules, etc., etc., excepting a Stanyan



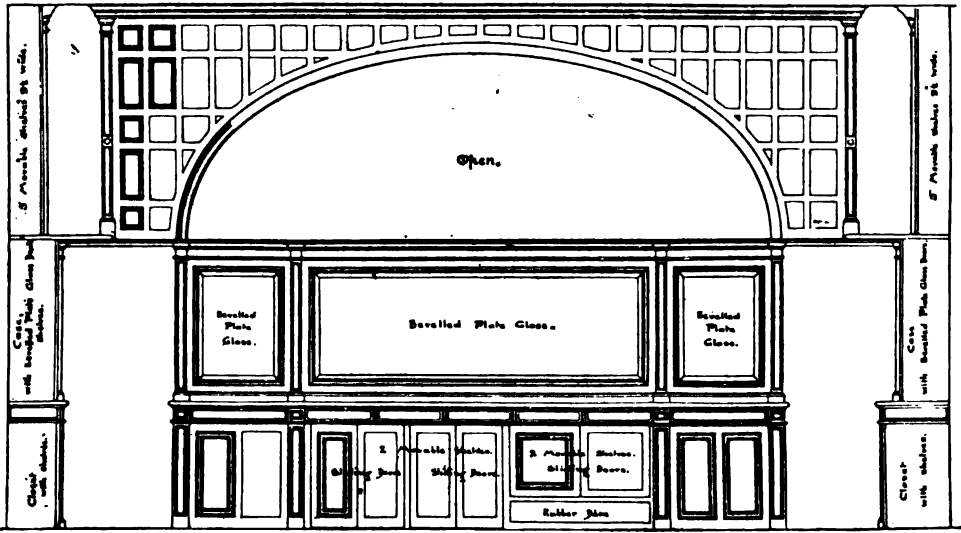
Rear of Prescription Counter.



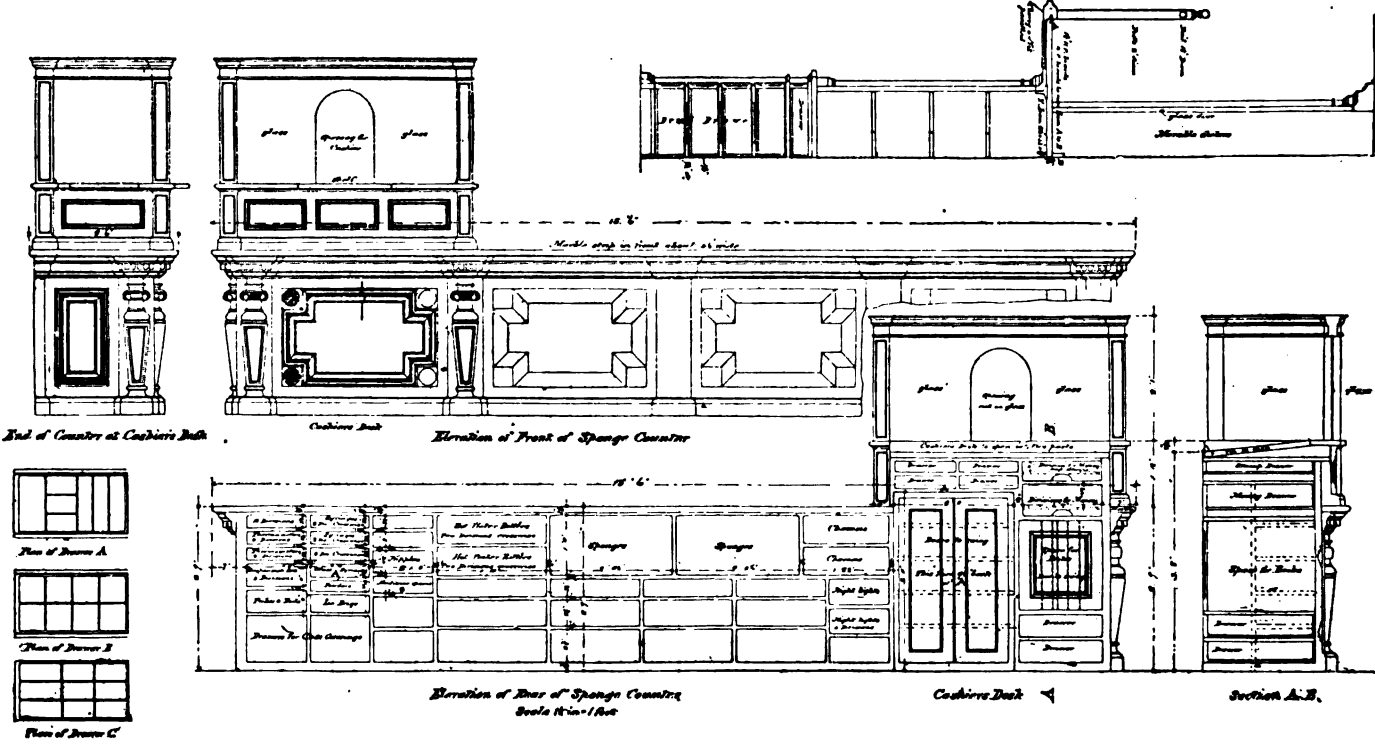
Section through Prescription Counter.



Shelving and Cases at rear of Prescription Counter.



Front of Prescription Counter.



mixer for stiff pastes, and a new bottle-washing attachment which sends a fine and forcible stream of water into a bottle when it is pressed down upon it, cleaning very dirty bottles quickly, thoroughly, and with the expenditure of a small quantity of water.

(To be continued.)

Oil of Rose.

ONE of the characteristic tests for the genuineness of oil of rose has been considered its property of separating, when slowly cooled to near 10° C (50° F.), a crystalline stearopten, free from oxygen. Though the percentage of this stearopten contained in the oil has been known to vary greatly, probably between 4 and nearly 70 per cent (Hanbury, "Science Papers," 1876, 171), yet, until within a short time ago, it was never found entirely absent in any oil of rose claiming to be genuine. Lately, however, Mr. Helm reported having met with reputedly genuine samples containing none of this stearopten at all.

Prof. Flückiger, who has chosen this statement as the subject of one of his recent papers (*Arch. d. Pharm.*, 223, 185), reports that he himself had never met with such an oil, but does not consider its occurrence as at all impossible, since it is well known that probably all the oil of rose of the Turkish market, even that obtained from the most reliable houses at Constantinople, is adulterated. Possibly some of the additions were copious enough to prevent any separation of the stearopten.

A sample of genuine Turkish oil of rose, obtained by the agent of Schimmel & Co., of Leipzig, at Kazanlik, personally, was found by Prof. Flückiger to contain 9.20% of the stearopten. Moreover, while the absolute genuineness of even this sample of oil may still be doubted, a positive proof is offered by the fact that oil of rose distilled by Schimmel & Co. from roses grown near Leipzig was found to contain 28.80% of the stearopten.

After all, it seems that the requirements of the pharmacopœia coincide with the possibilities and facts; but it may nevertheless be advisable to take into consideration the anomalous fact observed by Mr. Helm.

New Process for Preparing Chlorate of Potassium.

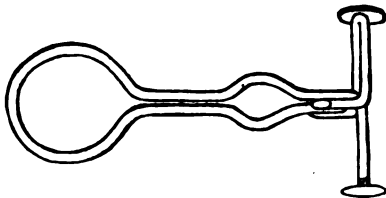
CHLORINE gas is conducted through milk of magnesia, and the resulting solution evaporated to 35°-30° B., until a portion of the chloride of magnesium begins to crystallize out. This concentrated solution is now mixed with chloride of potassium (obtained from the Stassfurt potash mines), and the resulting products are chlorate of potassium and chloride of magnesium. The larger portion of the chlorate of potassium crystallizes out. The remaining mother-liquid contains only 5 to 10 per cent of the total quantity of the chlorate, which it does not pay to extract. It is then further treated with hydrochloric acid and steam, whereby the chlorate is made to give off chlorine gas, which is absorbed by magnesia or lime. The residue, containing an excess of hydrochloric acid, is neutralized with carbonate of magnesium, and consists now of a solution of chloride of magnesium contaminated with a little chloride of potassium. It is evaporated to 45° B., allowed to cool, and to become solid. This solidified magnesium chloride may either be sold as such, or may be reconverted into magnesia by driving off the chlorine with heat, when the magnesia may be again used in the next operation. This process has been patented by E. K. Muspratt, of Seaforth Hall, and G. Eschellmann, of Widnes.

ROTARY BURETTE HOLDER.

ONE of us for some time past has used a rotary burette holder, which is very convenient, when several assays are to be made one after another, involving the use of different test-liquids. The apparatus which we have constructed for ourselves is a circular board with a smooth central brass plate at its lower surface, from the middle of which proceeds a smooth iron rod, which is inserted into a piece of iron pipe provided with a brass shoulder and screwed into a firm base. One of Dr. Squibb's retort stands, cut off to a suitable height, will answer well. A thread is cut on the upper end of the pipe, and an ordinary coupling, to which the brass shoulder is soldered, is screwed upon it. The circular board, therefore, revolves smoothly upon the brass shoulder. In the illustration, the board carrying the burettes has been purposely raised



up to show the rod and the shoulder upon which the board revolves. The burettes are held by clamps resembling ordinary pinch-cocks, so arranged that they will be able to grasp



the burettes firmly. One of these is shown in the above cut. The feature of the turn-table afforded by G. Hoppe's apparatus, previously described, may easily be combined with the rotary burette-holder, which may be of occasional advantage.

SYRUP OF THE PHOSPHATES of Iron, Quinine, and Strychnine, with Assays of Samples.*

THE author first quotes the various names under which this preparation is known, which are—besides the official one—Easton's Syrup, Aitkin's Syrup, Syrup of the Three Phosphates, and Syrup of Triple Phosphates.

He next gives a detailed account of the various formulæ formerly proposed for preparing this syrup, and

discusses their merits or disadvantages. He points out that the strength of the product, prepared by what is known as Aitkin's and Easton's formulæ, does not correspond with the proportion of the ingredients claimed for it, since the several operations of mutual decomposition (to produce the ferrous phosphate), or precipitation, introduce discordant results. Moreover, he finds, as many others have before him, that the finished preparation does not keep well, becomes dark colored and eventually deposits a sediment, probably due to oxidation of the iron salt, and to some action of the phosphoric acid upon the sugar or its coloring matter.

He finds the new official process (*U. S. Pharm.*, 1880) to be the most satisfactory. With a view to devise a systematic process of assay for this preparation, he first made a sample of the syrup from standard ingredients prepared with the greatest care by himself. [The author gives the methods by which he prepared every ingredient and tested its purity and conformity to pharmacopœial requirements. But owing to want of space, we are compelled to omit this and other interesting portions of the thesis.]

The method of assay adopted by the author was the following: The alkaloids, quinine and strychnine were precipitated in a weighed portion of the syrup diluted with an equal volume of water, by means of soda. The mixture was then shaken with three successive portions of chloroform, the chloroformic layers united and evaporated, and the residue dried at 212° F. This was then weighed as "total alkaloids."

These mixed alkaloids were treated with ether three times in succession; whereby all the quinine was dissolved, and the strychnine nearly all remains behind. [Strychnine requires about 1,250 parts of ether for solution.] The residue of the ethereal solution is weighed as quinine.

The liquid from which the alkaloids were separated is next evaporated to dryness, and the dry residue ignited until it forms a grayish-white mass on cooling. The slowly cooled residue is treated with hydrochloric acid and then filtered. In the filtrate, the iron is precipitated by ammonia, and the precipitate thoroughly washed and ignited. This gives the weight of ferric oxide.

The free phosphoric acid is determined in a separate sample of the syrup, diluted with water, by adding test-solution of magnesium [*U. S. Ph.*, p. 392], collecting the precipitate after twelve hours' washing, drying, and igniting. From the residue, which is pyro-phosphate of magnesium, the amount of phosphoric acid is calculated.

The results obtained by the author, in 13 commercial samples of syrups, are appended in tables, from which we gather the following:

A standard syrup, prepared by the author himself, was found to yield in 20 grammes :

	Gm.
Total Alkaloids	0.274
Quinine	0.269
Strychnine	0.005
Ferric Oxide	0.0546
Phosphoric Acid (P ₂ O ₅)	0.513

[The latter calculated from the author's figures.]

The commercial samples varied greatly, the extremes being in 20 Gm. of the syrup:

	Highest.	Lowest.
Total Alkaloids.	0.295	0.175
Quinine	0.295	0.173
Strychnine	0.014	0.005
Ferric Oxide	0.1998	0.0476
Phosph. Acid (P ₂ O ₅)	0.482	0.2276

[The latter calculated from the author's figures].

* Abstract of a thesis presented to the Massachusetts College of Pharmacy, 1885, by JOSIAH CLIFTON CUTTING, Ph.G.

Toughened Filter-papers.

In attempting to prepare pyroxylin filters, the writer found that paper was remarkably toughened by the action of nitric acid, the product being pervious to liquids, and quite different from parchment-paper made with sulphuric acid. Simple immersions in, or mere moistening with nitric acid of density 1.42, and subsequent washing with water, are sufficient to produce the effect, and no particular precautions are necessary.

The toughened paper can be used like the ordinary kind, filtration being but little retarded, whilst the closeness of its texture and the absence of all pinholes render its action efficient. It can be washed and rubbed without damage, like a piece of linen, and is therefore likely to prove useful for the collection of substances that have to be removed from the filter whilst wet. Comparative trials were made of the strength of wet Swedish paper before and after being toughened. A strip of each, 25 Mm. wide, was made into a loop, and the ends held in a vertical clamp; through the loop was passed a glass rod 5 Mm. in diameter, to which by strings at each end a scalepan was attached. Ordinary filter-paper broke with a weight that varied from 100 to 150 grammes, whilst the toughened paper bore a weight of about 1.5 kilos before it gave way, and is therefore more than ten times as strong as the other. In consequence of its great tenacity, the toughened paper can be used in ordinary funnels with the vacuum pump.

Several trials were made, and it was found to bear the greatest pressure produced by the pump employed (a common exhausting syringe), whilst a single stroke of the piston broke the ordinary paper. The treatment with nitric acid producing but little change in texture, the toughened paper fits sufficiently close to the funnel to prevent undue access of air, and is therefore not open to the objection made against the parchment filters recommended by Tichborne (*Pharm. J. Trans.*, 1871, 881). An admirable way of preparing filters for the pump is to dip only the apex of the folded paper into nitric acid, and then wash with water; the weak part is thus effectually toughened, whilst the rest remains unaltered.

The paper contracts in size under the treatment, and the ash is diminished. Thus circles, 11.5 Cm. in diameter, became reduced to 10.4 Cm. or about one-tenth, whilst the ash was reduced from 0.0026, to 0.0011 gramme. The toughened paper contains no nitrogen. To determine this point, a portion was gently heated in a test-tube with strong sulphuric acid, by which it was almost immediately decomposed and carbonized. Water was added and the mixture filtered, a clear white filtrate being obtained. On the other hand, similar paper that had been converted into pyroxylin, with the same nitric acid mixed with an equal bulk of oil of vitriol, dissolved in warm sulphuric acid without blackening, abundance of brown fumes being evolved, and the solution after dilution reacted strongly with ferrous sulphate. Moreover, the toughened paper gave no evidence of containing nitrogen by Lassaigne's test, and it burns like ordinary paper, and not at all like pyroxylin.

Subjected to the action of nitric acid of the strength specified, paper undergoes no increase in weight, as is the case when pyroxylin is formed, but, on the contrary, there is a slight decrease. Thus a circle of Swedish paper 11.5 Cm. in diameter weighed 0.6795 gramme before treatment with nitric acid, and afterwards it weighed only 0.6749 gramme, showing a loss of 0.58 per cent.

The effect of nitric acid on paper does not appear to have been studied

very completely. Gmelin states ("Handbook," 15,135), apparently on his own authority, that "cotton, linen, or paper immersed for two or three minutes in nitric acid of sp. gr. 1.5 acquires the texture of parchment, and is rendered impervious to light and water, because it becomes covered with a film of xyloidin," and further, that "paper immersed in cold, strong nitric acid swells up to a jelly, which gives a blue color with iodine on isolated spots, and therefore contains starch," and, on the authority of Mitscherlich, that "Swedish paper is not at all decomposed by immersion in cold nitric acid of sp. gr. 1.2, and but slightly in the acid heated, to 100°." No further information than this has been found by the writer.—E. E. H. FRANCIS in *Journ. Chem. Soc.*

Semi-Annual Report on Commercial Drugs and Chemicals.*

Aconitine.—Gehe & Co. state that they prepare this alkaloid according to Duquesnel's method, *slightly modified*. This yields both an amorphous and a crystalline alkaloid. It has, however, been ascertained by Bunsen and Madsen, in Copenhagen, that Gehe's crystalline aconitine is *less powerful* than the amorphous variety, which is just exactly the reverse of what is observed in the products of other manufacturers. Gehe & Co. explain that the only modification of Duquesnel's process which they have made is to use oxalic in place of tartaric acid, and they cannot understand the cause of the difference in action.

[We think it unfortunate that this step has been taken, as there is already too much confusion among and discrepancy between the different aconitines of the market. In our opinion, it would be the safest plan, though perhaps attended with loss to the makers, to withdraw the whole product from the market. In the case of such a powerful alkaloid, which appears to be so easily affected by reagents, perfect uniformity of preparation is the only guaranty for uniformity of effect.]

Avelos Milk, originally recommended by Dr. T. A. Velloso as a specific in cancerous sores, which were to be painted with it every third day, is not yet easily obtainable, nor is its true source known.

Azolitmin.—The pure blue coloring matter of litmus has been in good demand in spite of its high price (10 Gm. at 4 marks, or about \$3 per oz.). The substance is dissolved in water containing a little caustic soda, the proper tint produced by cautious addition of oxalic acid, and paper impregnated with this solution in the usual manner. (See Lacmoid.)

Balsam Copaiba.—The thin-fluid Para balsam is supplied in largely increased quantity, and though this variety is much in demand, fresh shipments, which constantly arrive, will probably prevent its becoming higher.

Balsam Peru.—The price of this article has considerably declined, and supplies have been abundant. In spite of rumors of a diminished crop, the imports at Hamburg have been very large, and Gehe & Co. remark that spurious balsam has now become quite scarce.

The improved test for the purity of balsam of Peru devised by the German Pharmacopœia Committee is one which every genuine balsam will stand.

Bismuth.—The uncertainty regarding the value of this metal terminated about the middle of last January in an advance of about fifty cents per kilo, which was determined on by the syndicate. It was the competition of the

Australian mines which had disturbed the long-continued stability of the value of this metal, arranged by the coalition of the Saxonian and South American mines. The new competitor has now been taken into the firm, but nothing is known as to its output. It should have been expected that an increased production would result in lower prices.

Bromine and Bromides.—The importation of American bromide of potassium in Germany has greatly diminished, since a better quality can be made there at lower prices. Since the beginning of this year, the reduced working of the Stassfurt mines has diminished the output of bromine by one-half, whereby this substance has become very scarce and high. Heretofore all attempts to drive up the price of bromine and bromides by a coalition between the American and European manufacturers turned out nugatory. Whether such a coalition is now possible remains to be seen. Gehe & Co. think that the American product will still be unable to compete with the German, as the latter is free from chlorine, while the former is not. [We think, however, that it can compete, and probably does so already, to judge from the present higher quotations for American bromine and bromides in the market.]

Caffeine.—The recently introduced compounds, *sodio-benzoate* and *sodio-cinnamate of caffeine*, as well as the hydrobromate, have been in active demand. [The two former have been used with much success in form of hypodermic injections in Bellevue Hospital, New York.]

Camphor.—The price has again further declined, and although the export from Formosa was expected to be considerably diminished owing to the Franco-Chinese war, yet Japan produces so much that the deficit will not be noticed. The Japanese government has abolished certain restrictions formerly in existence regarding the collection of crude camphor. At present there is nothing to prevent the total destruction of the camphor tree forests, and, unless precautionary measures are taken, the camphor trade is in danger of being entirely destroyed.

Cascara amara.—The bark of this, which is probably a *Picramnia*, of the family of Simarubaceæ, contains an alkaloid discovered by Thompson, which the latter named picramnine. The bark and its preparations are reported to be useful in certain chronic skin diseases, syphilis, etc. Gehe & Co. had not yet obtained a supply from the West Indies.

Cinchonamine.—This alkaloid, discovered in the variety of Cuprea bark, derived from *Remijia Purdieana*, promises to become a valuable reagent in the laboratory, since it yields, with nitric acid, an almost insoluble precipitate.

Cinchona Bark.—The complete break-down of the bark market, after last year's disastrous failures, was only prevented by the fact that the hypothecated quantities of quinine and bark were in the hands of powerful banking institutions which permitted but little or none at all to reach the market. Manufacturers' barks, therefore, receded but slowly in price, and when the lowest figure was reached in November last, with 5d. per unit, the Ceylon planters declared that it did no longer pay to collect the bark. By holding back stocks, better prices were realized towards January, and when the news of political disturbances in Colombia reached Europe, the demand became likewise more animated. The stocks in England were, on Dec. 31st, 1884, 19,167 bales less than in 1883; in France, 7,077 bales less; and in New York, 3,600 less. Among the London stocks, there are still quoted some 10,000 bales of Cuprea bark, which had been long ago declared as exhausted.

* Abstracted from Gehe & Co.'s *Handelsbericht*, April, 1885.

Ceylon's export was almost double that of the preceding year:

Oct. 1, 1880 to Sept. 30, '81:	1,208,518 lbs.
" " 1881 " " " '82:	3,099,898 "
" " 1882 " " " '83:	6,925,598 "
" " 1883 " " " '84:	11,492,947 "

The exports for the current year were anticipated to be smaller, but up to Feb. 19th, not less than 3,731,762 lbs. had already been exported.

If, in spite of this and other unfavorable circumstances, higher prices could be obtained for bark during January, this could be only due to sudden large purchases for the U. S., which had only a small quantity in stock, and where the new factories (in Philadelphia and New York) were being erected or completed. It is known to be the object of the American manufacturers to render the importation of European quinine superfluous and impossible. To do this, a very much larger consumption of bark by the American makers would be necessary, as may be seen from the amounts of European quinine imported in the U. S. since 1877:

1877 (20% ad valorem) ..	75,804 oz.
1878 " " " "	17,549 oz.
1879 " " " "	228,348 oz.
1880 (duty-free)	416,998 oz.
1881 " " " "	408,851 oz.
1882 " " " "	794,495 oz.
1883 " " " "	1,055,764 oz.

And while there are several ways in which the American makers might attempt to stiffen the market (after supplying their immediate needs), this will probably prove futile in view of the large supplies available in London. Besides, large quantities of quinine are still locked up as collateral held by banks, and if the U. S. produce enough for home consumption, the European factories will turn out more than they can dispose of. An increase of quinine prices could, therefore, only result from a diminished export from Ceylon, combined with an interruption of South American shipments.

Coca Leaves and Cocaine—are undoubtedly the lions of the day, no other drug having caused such a stir, professionally or commercially, for many years past. Gehe & Co. have prepared the alkaloid cocaine for almost twenty years, but it was only known to be able to excite the nervous system, to prevent waste of nitrogenous tissue, and to be useful, therefore, in certain diseases, as gastric troubles, typhus fever, phthisis, and the morphine habit. But when Dr. Koller, of Vienna, had discovered its local anæsthetic effects upon the eyeball, the demands for the alkaloid became so urgent that supplies, which formerly would last several years, were exhausted in a few days. Coca leaves, at the same time, began rapidly to rise in value and it was only a short time until they also became scarce, almost at any price. The first outside supplies obtained by Gehe & Co., after the first rush was over, still contained the normal percentage of alkaloid, namely 0.3%, but soon afterwards lots appeared which varied greatly and often contained but little cocaine.

Coca leaves of good preservation have not been in the market for a long time, since it is difficult to dry the freshly gathered leaves in the rainy districts of South America where the shrub flourishes most abundantly, and means of artificial drying are not yet available. Gehe & Co. have strong reason to believe that fresh coca leaves, in their native home, contain much more cocaine (up to 1%) than the imported dry ones. As cocaine is undoubtedly destined to be an important remedy, it would be advisable to attempt the cultivation of coca in Southern France or Italy [according to Gehe & Co. We have already in the beginning of this year expressed our views on the cultivation of coca in this country, and

suggested that, if no suitable locality can be found within the U. S., Mexico would probably be found to contain districts favorable to its growth. It would certainly be a paying investment, if successful plantations could be started].

Gehe & Co. further state that cocaine or an alkaloid allied to it may possibly be present [?] in the young leaves of the horse-chestnut (*Æsculus Hippocastanum* L., nat. or. Sapindaceæ), and it remains to be seen whether the species of *Erythroxylon* which is indigenous in Brazil does not contain cocaine or a similar alkaloid likewise.

The last coca leaves disposed of, from old stocks in the market, yielded no cocaine at all, but another alkaloid, which, as amorphous hydrochlorate, resembled cocaine in some respects and differed from it in others, while at the same time it cannot be identical with hygrin. Dr. Koller, who experimented with it, found that two to three drops of a five-per-cent solution, applied to the eye, did exert some anæsthesia, without dilatation of the pupil. Its poisonous effect is much inferior to that of cocaine, as was shown by experiments on animals.

Cola-nuts—promise to become a reliable substitute for the scarce Guarana. The supply, however, is as yet very irregular.

Condurango.—True Mataperro Condurango has become cheap, as large quantities were brought from Ecuador.

Cubebs—have varied greatly in value and quality. Many lots were below the average, and even adulterations have been noted, for instance in New York, where sixteen bales were refused admission [and likewise in London, where false cubebs were first noticed, we believe]. The new crop is shortly expected and will probably be available at more reasonable prices.

Daturine—is gradually being laid on the shelf, since it is becoming more generally known that it is identical with atropine, while it is about seven times as dear, owing to the small amount obtainable from stramonium seed.

Ergot.—Tanret recently published a paper (see our May number, p. 97) in which he denied and even ridiculed the results of the investigations of Dr. Kobert, who had discovered the new principle *cornutine* (see February number, p. 25). Recent experiments of Dr. Kobert, however, communicated by Gehe & Co., tend to show that cornutine causes rapid and energetic contraction of the pregnant uterus. When tried on pregnant animals, the fœtus was expelled quickly, together with placenta, without injuring the mother. [It would seem, however, that further study is necessary, before the substance can be used with safety in man. Gehe & Co. sell it at \$6 per gramme.]

Euonymin.—Heretofore this name has been applied exclusively to a resinoid substance obtained from *Euonymus atropurpureus*, which has been used as a cholagogue and laxative. The same name has, however, lately been applied by Hans Meier and Romm, at Dorpat, to a crystallizable glucoside obtained from the plant, which is an intense heart-poison, and is likely soon to play a great rôle as a substitute for digitalis.

Glycerinum Nitricum.—This name has been adopted by Gehe & Co. to designate nitroglycerin, of which they keep an alcoholic solution 1 in 20. Gehe & Co. state that they have chosen this name, first, because they did not wish to use the ordinary name nitroglycerin (which reminds one of dynamite and dynamiters), but "because it is chemically correct. The article usually called nitroglycerin is not a nitro-compound, but the ternitrate of glycerin." [The words in quotation marks are translated literally. We need hardly say, that the

statement is incorrect, and consequently the name not "chemically correct" either. It will do well enough, however, as a make-shift.]

Jequirity is in smaller demand, since its use has been reported to be injurious to the eyesight. Its efficiency is now stated to be due to an albumen-like substance, *abrin*, discovered in it by Warden and Wadell.

Juniper Berries and Oil.—The crop of Carpathian berries was a total failure, and recourse had to be had to Italian berries, which are, however, not sufficient in quantity to supply the demand. Hence both the berries and the essential oil experienced a considerable advance in price.

Kefir, the so-called Caucasian milk-ferment, begins to attract considerable attention. It is used for the preparation of a beverage resembling koumya, and forms the chief food of the Caucasian mountaineers during the summer. The ferment, consisting of bacilli (new species *Dispora Caucasica*, Kern) and ferment cells, is developed in fresh milk which should not be too fat. According to the state of the atmosphere during the drying, and according to whether it has been developed in cows', sheeps', or mares' milk, it has a darker or lighter color.

Kousoo is becoming scarce, since no fresh supplies have reached Trieste for a long time past.

Lacmoid, a coloring matter resembling litmus, obtained from resorcin, is now also in the market (about \$4.80 per oz.). The transition tint, with this reagent, is less sharp than with azolitmin. The latter assumes with a trace of acid a bright onion-red tint, while the former turns cherry red.

Methylchloride, a gaseous anæsthetic, is put on the market by a Paris firm, which sends it out either in large iron or in smaller copper cylinders tested to twelve atmospheres.

Milk-Sugar.—Swiss manufacturers will probably be compelled to moderate their demands hereafter, since more attention is being paid in Germany to the manufacture of this product on a large scale, and the quality of the German product is much superior. [Reports of the manufacture of milk-sugar outside of Switzerland have often made their appearance; but, so far, the enterprise seems to have been, in most cases, a failure. See *Am. Drugg.*, 1884, 161.]

Musk.—American musk, from the musk-rat, was proposed some time ago as a substitute for the genuine article. It has been tried by perfumers, but has not found any favor so far.

Naphthalin, which is being used in increased quantities, may be best purified by repeated crystallization from alcohol. Sublimation is less advisable, since its high boiling point might induce decomposition.

When powdering naphthalin, a little alcohol greatly facilitates the operation.

[As will be remembered, we have pointed out that a very small quantity of oil of bergamot completely modifies the disagreeable odor of the substance.]

Naphthol has been in very active demand lately, as a remedy in skin diseases.

Oils of Orange, Bergamot, and Lemon.—These oils have dropped to prices lower than have ever been reached before. The principal factors have been, first, a series of large fruit crops, and secondly, an enormous increase of production. Especially is this the case with oil of lemons, of which immense quantities have been turned out, in consequence of the unremunerative prices offered for the fruit. The Sicilian manufacturers eagerly underbid each other to dispose of their output, as low as 6½ marks per kilo (about 78 cents per kilo) having been asked for it. In spite of the

(Continued on page 111.)

THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 6. WHOLE No. 132

FRED'K A. CASTLE, M.D., - EDITOR.

CHAS. RICE, PH.D., ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

JUNE, 1885.

SUBSCRIPTION PRICE per year, \$1.00

SINGLE COPIES, 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & CO., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

MR. KILMER's experience in window decoration seems to justify what has been said by us in preceding numbers regarding its importance. It has always been somewhat remarkable that pharmacists should so often pay a rental for windows which they put to no better use than advertising other people's business. We hope that the suggestions we have published will enable them to do something better with the space at their disposal than filling their windows with display cards of theatre companies, itinerant showmen, and cigar manufacturers.

THE importance of several original communications published in this number, as well as the space given to answers to queries, has led us to defer until next month the continuation of the translation from Dr. Hager's work on practical pharmacy.

THE first of a series of papers by Professor Laurence Johnson on the application of photography will be found in this number and will be of interest to those who have the taste and opportunity for studying this important branch of natural science.

There are many reasons why pharmacists should know more of the practical details of photography, and

among them is the fact that the process is largely of a chemical nature and therefore germane to the pharmacists' profession. Another reason, quite as worthy of consideration at present, is the opportunity afforded by the present development of the popular taste for dry-plate photography, for extending the pharmacist's business so as to include photographic materials in his stock.

There are but few chemicals employed which are not now obtainable in most drug-stores, and it will involve but little outlay of money or time for the pharmacist to cultivate this branch of business. To do this successfully, he should know something of photography and be able to advise his customers what to purchase and how to overcome some of the difficulties which they may encounter in their early attempts at picture-making.

It may not be necessary for a pharmacist to carry a stock of photographic apparatus; but the dry-plates and chemicals are easily preserved, and should yield a good profit.

WE conclude in this number the description of the store of Messrs. Kelley and Durkee, in Boston, although the illustration of the counter apparatus described in the text will not appear until next month, owing to the space required in this issue for the illustration of the details of the counters and cases.

THE Committee on Pharmacy and Queries of the New York State Pharmaceutical Association solicit suggestions from members and others as to the list of queries to be proposed.

The Worcester (Mass.) North Druggists' Association held its second annual meeting Tuesday, May 5th, at Fitchburg Hotel, Fitchburg, Mass., President W. A. Macurda in the chair, about twenty members being present. The morning session was devoted to the annual reports of officers, to the reading of papers by Messrs. F. A. Davison, of T. Metcalf & Co., of Boston; Converse Ward, of Athol; H. G. Greene and H. F. Rockwell, of Fitchburg, and a general discussion of questions of interest to the association. Dinner was served at two o'clock, after which the members proceeded to the election of officers for the ensuing year, with the following result: *President*, W. A. Macurda, Fitchburg; *Vice-President*, H. A. Burdett, Clinton; *Sec. and Treas.*, H. F. Rockwell, Fitchburg; *Standing Committee*, H. A. Estabrook, of Fitchburg; F. W. Lord, of Athol; C. F. Nixon, of Leominster; James Emerson, of Gardner; and D. H. Joel, of Fitchburg.

The association has had a very prosperous year, keeping harmony among its members, and preventing the foolish cutting of prices from which druggists have suffered so much in other cities.

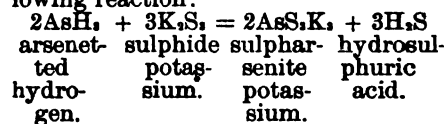
HENRY F. ROCKWELL,
Secretary.

Preparing Hydrosulphuric Acid absolutely free from Arsenic.

HYDROSULPHURIC acid gas free from arsenic could be hitherto prepared only by starting from materials free from arsenic, while no method was known to deprive arsenical hydrosulphuric acid gas from the contamination. As suitable sources, free from arsenic, the following were usually recommended: sulphide of calcium, and sulphide of barium, which have the additional advantage that they eliminate no hydrogen in addition to sulphydric acid, liquid sulphhydrates of barium, calcium, or magnesium, artificial (pure) sulphide of iron, sulphide of zinc (see note, below), etc., etc.

All these substances are not as easy to obtain as the ordinary crude sulphide of iron of commerce, and besides, it is not by any means easy to procure a hydrochloric acid free from arsenic. It will therefore be of great importance to possess a method of preparing absolutely non-arsenical hydrosulphuric acid gas, even from contaminated materials. This may be accomplished, according to Otto v. d. Pfordten (from whose paper we have abstracted this article), by passing the hydrosulphuric acid gas over sulphide of potassium, the ordinary official liver of sulphur, which completely retains any accompanying traces of arsenetted hydrogen.

For this purpose, the generated gas is first made to pass through a wash-bottle, and then through a chloride of calcium apparatus to dry it. It then enters a difficultly fusible glass tube, passing through a sheet-iron box of about 30 Cm. in length, and 10 Cm. in height and depth, under which is placed a gas-flame and which acts as a hot-air bath for the tube, which must be kept at a temperature of 350 to 360° C. The tube is filled with pieces of sulphide of potassium, which, though it melts somewhat at the above-named temperature, yet retains its shape and consistence, so that there is no danger of the tube being stopped up. If the operation is to be frequently repeated, and the control of the proper temperature by means of the hot-air bath too circumstantial, the tube may be heated by keeping it immersed in melted lead. The gas passing from the tube is passed through a solution containing carbonate of sodium, and is then completely pure and fit for use. It no longer contains even a trace of arsenic. The author thinks that the arsenic is withdrawn from the gas probably according to the following reaction:



—Ber. Deutsch. Chem. Ges.

Note.—The most suitable source for the generation of hydrosulphuric acid free from arsenic, according to Hager, is sulphide of zinc in small pieces, in quantity from $\frac{1}{4}$ to 2 Gm. (8 to 30 grains) for each development, if carried out on the scale shown in the illustration on p. 42 of our March number (which see), where a test-tube holds the whole of the liquid to be treated.

After having been used, the end of the delivery tube is placed under water. If 60 C.c. of dilute sulphuric acid have originally been introduced into the flask, as much as 10 Gm. of sulphide may gradually be introduced before it needs refilling.

In place of sulphide of zinc, sulphide of calcium or sulphide of barium may be used, as these are equally free from arsenic.

Sulphide of zinc may be prepared as follows: 100 parts of pure oxide of zinc are mixed with 45 parts of precipitated sulphur, and the mixture gradually, and in 4 or 5 portions, introduced into a boiling solution of 15 parts of caustic soda in 150 parts of distilled water, contained in a porcelain capsule or casserole, and the whole boiled, under stirring, for half an hour. The mixture is then diluted with water, the sediment collected on a strainer and washed with water. The contents of the strainer are then freed from water as much as possible, by squeezing, the mass spread out upon porcelain plates and dried in a lukewarm place. Or it may be mixed with one-tenth of its weight of powdered white bole and a little sugar, then formed into slender sticks (about 0.4 to 0.5 cm., or $\frac{1}{4}$ to $\frac{1}{2}$ inch. thick), which are to be dried in the same manner.

(Continued from page 109.)

low price for the genuine oil, adulterations are more common than ever, and great care should be exercised in purchasing.

Peptone, Dry.—Gehe & Co.'s dry peptone contains of true peptone about 65 per cent; of partly peptonized substances, about 29 per cent.

Physostigmine.—It is surmised that the salicylate has a less energetic effect than the sulphate. [We doubt this, as we have not heard of any such observations from the physicians of our acquaintance who have used both salts.] It is an interesting fact, however, that at present only that kind of sulphate is in demand which will rapidly turn red when dissolved. It is supposed that this change is a criterion of greater activity.

Pilocarpine.—Besides its medicinal use, it is still in good demand as a hair-restorer.

Rhubarb.—Fine Shensi rhubarb, the most esteemed variety, has become quite scarce. The inferior qualities of rhubarb are generally lower in price than last year, but the better ones, namely, Canton and the before-mentioned Shensi, are very high.

Santonin.—The new factory at Tshimkend, near Tashkend, in Turkestan, which has driven all others out of competition, has begun to produce, and the first instalment of their manufacture is on the road to Europe.

Senna (Alexandria) is steadily advancing in price, owing to the failure of new supplies reaching Cairo from the mountainous districts of Dongola, in the Sudan.

Syzygium Jambolanum Seeds—the seeds (or rather fruits) of a myrtaceous plant indigenous in the East Indies, and cultivated on the Antilles, have been reported to favor the elimination of sugar through the urine in diabetes mellitus. The active principle is supposed to reside in the integument.

The Beautifying of the Skin.

In the work on Diseases of the Skin, edited by Prof. H. von Ziemssen,* Dr. Heinrich Auspitz, of Vienna, makes the following observations upon this subject:

1. A healthy integument is not necessarily beautiful. Even if all requirements concerning diet, residence, atmospheric and climatic conditions, etc., are carried out, the complexion is often extremely bad. The general condition of health has no influence on the beauty of the complexion, though it has upon the health of the skin.

2. Cleanliness is a *sine qua non* of the beauty of the complexion, though it does not play a great part in the health of the skin.

3. Water is serviceable to the skin only in moderate amounts and at moderate temperatures. Very cold or warm baths, when used to excess, diminish the elasticity of the skin and its power of resistance to external irritants.

4. Distilled and so-called soft water are more suitable for washing and less irritating than hard water.

5. The hard soda soaps are usually preferable to the softer potash soaps for toilet purposes. The quality of soaps depends upon the quality of their constituents and the thoroughness of the saponification. Good soaps must not contain free alkali, or any foreign irritating substance. The addition of moderate quantities of perfumes does not materially change the quality.

6. Simple, finely-ground powders, such as starch, magnesia, etc., are entirely innocuous, and often act as a useful protection against external irritants.

7. Frequent application of alcohol abstracts the water of the skin, makes it dry and brittle, and impairs its nutrition. This is also true of glycerin. All toilet washes containing alcohol to any considerable extent should be avoided.

8. This is true to a still greater extent of other additions to washes, such as corrosive sublimate, mineral acids, certain metallic salts, etc.

9. Camphor acts merely as a bleaching powder. This is also true of benzoic resin, sulphur flowers, and substances containing tannic acid.

10. The use of sweet-smelling oils and fats should be employed to a greater extent than is now done for toilet purposes.

11. This is particularly true with regard to the growth of the hair. The nutrition of the scalp should be increased by the rational application of fat (for example, in the form of oil baths by means of the application at night of a sponge soaked in oil upon the scalp), and the greater use of simple pomades; this should be applied to the roots of the hairs rather than the shafts.

12. Substances should be avoided, or sparingly used, which abstract water from the skin and the roots of the hair.

Improved Tests for German Pharmacopoeia Preparations.*

THE Pharmacopoeia Commission of the German Apothecaries' Association have proposed the following amendments to the German Pharmacopoeia:

Chininum Hydrochloricum (Quininae Hydrochloras).

Foreign Alkaloids.—Two Gm. of the salt are mixed with 2 Gm. of sodium sulphate and 20 Gm. of water, and the whole allowed to stand at 15° C. for half an hour, frequently shaking the mixture, which is then filtered; 5 C.c. of the filtrate treated with ammonia until the precipitate formed redissolves should not require more than 7 C.c. of ammonia for the purpose.

Morphium (Morphine).—A mixture consisting of 0.05 Gm. of the salt, 10 drops of sulphuric acid, and 1 drop of nitric acid, should not appear of a reddish-yellow color.

Collodium Cantharidatum.

Acidity.—All ethereal extracts of cantharides have an acid reaction, for which reason a weak reaction on the part of cantharides collodium is permissible.

Cuprum Oxydatum (Cupri Oxidum).

Nitric Acid.—When 0.2 Gm. of the salt is gently heated in a test-tube with 2 C.c. of dilute sulphuric acid and 2 C.c. of a solution of ferrous sulphate (1:3), the addition of 1 C.c. of strong sulphuric acid to this mixture should not cause the formation of any red or brown ring.

Ferrum Pulveratum.

Sulphur, Phosphorus, and Arsenic.—The hydrogen gas developed by dissolving 2 Gm. of the powder in 30 Gm. of dilute hydrochloric acid should not, in the first few seconds, color a piece of bibulous paper moistened with a solution of lead acetate (1:10), nor, when burnt, should the flame produce dark spots upon a piece of cold porcelain.

Lithium Carbonicum (Lithii Carbonas).

Foreign Alkaline Carbonates.—A solution of 0.1 Gm. of the salt in 1 Gm. of dilute sulphuric acid, to which 1 Gm. of water is added, when treated with 4 Gm. of alcohol, should yield a clear liquid.

Natrium Bicarbonicum (Sodii Bicarbonas).

Monocarbonates.—When 2 Gm. of the pulverized salt are shaken up for ten minutes, at the ordinary temperature, in a closed test-tube, with 15 Gm. of water, so that the tube is quite full, and the solution thereby formed poured off from the undissolved residue into a test-tube containing 5 Gm. of a solution of mercuric chloride, within five minutes a white turbidity, but no reddish-brown coloration should ensue.

Pilocarpinum Hydrochloricum (Pilocarpinae Hydrochloras).

Acidity.—A weak acid reaction is permissible.

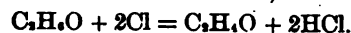
Resina Jalapa.

Foreign Resins.—Two Gm. of the resin heated for two hours over a water-bath with 10 Gm. of ammonia in a well-closed glass flask of about 200 C.c. capacity should yield a solution which does not gelatinize on cooling, which, saturated with acids, yields but a slight flocculent turbidity, and, when evaporated, but a very small residue insoluble in water.

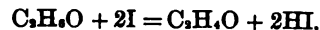
A Druggist's Show-Bottle.

A WEAK solution of iodine and iodide of potassium in water gives a pretty crimson color, and is in much request on this account by chemists for their show-bottles. A very good strength is obtained by using $\frac{1}{2}$ oz. each of iodine and iodide for a three-gallon bottle, and to the solution may be added a small proportion, say one per cent of hydrochloric acid. Methylated spirit must not be used to dissolve the haloids, or unexpected results will follow, the probability being that the entire liquid in the show-bottle would be colorless in a few days if in summer, or if in winter, in a few weeks. This was many years ago the experience of the writer, who had on one occasion used a few ounces of methylated spirit to dissolve the iodine and iodide before adding the water, and as the circumstance has recently been recalled to memory, it may probably be of interest to refer to it somewhat in detail.

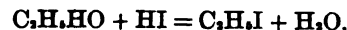
The reactions involved in the change of color, or rather in the loss of color, are complicated, and would, if thoroughly understood, form an interesting chapter in organic chemistry. It was at first thought that the ultimate product of the decomposition was ethylic iodide, which might be obtained in the following manner: It is well known that chlorine and ethylic alcohol react to produce aldehyde and hydrochloric acid, one atom of hydrogen being simply abstracted from the alcohol by the haloid to form the acid, thus:



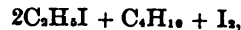
It is not known whether iodine possesses this power, but in the absence of evidence to the contrary, it may be assumed as probable, and in that case the following would occur:



Hydriodic acid and alcohol, when brought into contact, undergo decomposition, with the formation of ethylic iodide and water, this being brought about by an atom of iodine and a molecule of hydroxyl, and changing places, thus:



Ethylic iodide is a colorless body, but under the influence of sunlight it is decomposed to diethyl and iodine, thus:



and the free iodine imparts a brown color to the liquid.

As it happened, however, that the liquid remained perfectly clear even in the direct rays of the summer sun,

* New York: William Wood & Co., 1885.

* Archiv der Pharmacie und Chem. and Drugg.

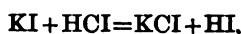
this operation was rendered doubtful, and with the view of settling the point, a series of solutions were prepared and exposed to the light.

These were composed as follows:

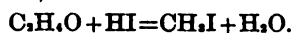
1. Iodine, and iodide of potash, and water.
2. Iodine, and iodide of potash and water, with 1 per cent hydrochloric acid.
3. Iodine, and iodide of potash and water, with 2 per cent methylated spirit.
4. Iodine, and iodide of potash and water, with 2 per cent rectified spirit.
5. Iodine, and iodide of potash and water, with 2 per cent methylated spirit and 1 per cent acid.
6. Iodine, and iodide of potash and water, with 2 per cent rectified spirit and 1 per cent acid.
7. Iodine and methylated spirit.
8. Iodine and rectified spirit.

Within three weeks, during which time the sun was seen on two days only, solution No. 5 was almost colorless, No. 7 was in much the same condition, and No. 3 had begun to change, while all the others were unaltered in appearance. Singularly enough, these three solutions are those in which methylated spirit was used, and it therefore follows that we must look to the methyl rather than the ethyl for an explanation of the reaction.

This source is all the more probable since it is well known that hydriodic acid acts energetically on methylic alcohol, provided the conditions are favorable. If we take No. 5 solution, in which the change took place most rapidly, we have still further confirmation of this hypothesis, as in this particular case the hydriodic acid is ready formed without waiting for the iodine to act on the spirit at all. The iodide of potash and the hydrochloric acid suffer double decomposition, thus:



and the hydriodic acid thus formed acting on the methol produces methylic iodide, thus:



This explanation does not, it is true, account for the disappearance of the free iodine, but it is extremely probable that the rearrangement that takes place is hastened by catalytic action, so that when once the reaction has been started, it proceeds until all the iodine is ultimately transformed into iodide.

That the methyl has to do with the decolorization rather than the ethyl is evident from the fact that the plain solution of iodine in methylated spirit lost its color, while the solution in rectified spirit was quite unchanged. It may happen, however, that impurities in the methylated spirit may have something to do with the loss of color, but the probability is that any foreign body would be present in too small a proportion to affect the result; and the likelihood, therefore, is that the change is due to the action of the methyl on the iodine.—*Chem. and Druggist*.

Toothache Cure.

A. GAUDET makes a report on a preparation which has come under his notice in form of a sample in the possession of a female customer, who praised it greatly. He succeeded, after numerous trials, in ascertaining its composition, which is as follows:

Mastic, tears	8 parts.
Balsam Peru	5 "
Chloroform	14 "

Dissolve the mastic in the chloroform, then add the balsam. After twelve or fifteen hours, filter.

For use, place two or three drops upon a small pellet of cotton, which is to be introduced into the cavity of the hollow tooth.—*L'Union Pharm.*

APPARATUS FOR DETERMINING THE SPECIFIC GRAVITY OF GRANULAR AND PULVERULENT SUBSTANCES.

THE apparatus below described is called "volumenometer" by its designer, Dr. C. Schumann, and is specially intended for ascertaining the specific gravity of granular and powdery substances.

A broad, flat-bottomed glass vessel A bears ground into its neck a graduate tube B, of the capacity of 40 C.c., and divided into $\frac{1}{10}$ C.c. For use, the apparatus is filled to the zero mark with a liquid indifferent towards the substance to be examined (water, oil of turpentine, etc.). A weighed portion of the substance is then gradually added through a wide-mouthed funnel, the quantity used varying between 60 and 200 Gm., according to its bulkiness. The tube is then closed with a cork, and allowed to stand until the surface layer of liquid is clear enough to read off its position by the lower meniscus. The specific gravity of the substance is found in the usual manner, by dividing the number of grammes of the substance used with the number of cubic centimeters by which the liquid has risen in the tube.



In order to avoid errors arising from differences of temperature, it is only necessary to allow both the substance and the liquid, previous to the experiment, to acquire the temperature of the room, and to take care that this same temperature be maintained throughout the experiment.—*Chemiker Zeit.*

A New Delicate Reagent for Nitrous Acid.

RAPHAEL MELDOLA has found that a dilute solution of a derivative of para-nitraniline, namely para-amidobenzol-azodimethyl-aniline, has the property, when coming in contact with nitrous acid and air or oxygen, of acquiring a blue color.

[The author describes the mode of preparation and gives the chemical relations of this substance in his original paper, in *Ber. d. Deutsch. Chem. Ges.*, vol. 17, 256].

The reagent is in form of a dark orange colored powder, which must be completely soluble in dilute hydrochloric acid. For use, a solution containing 0.5 Gm. in 1 liter is prepared, which possesses a deep red color.

To test a liquid for nitrous acid, a few drops of the red solution are first

added, and immediately afterwards a few drops of hydrochloric acid. Ammonia is then added in drops and the liquid stirred after each addition until the blue color appears. The ammonia precipitates the base, and the latter is converted by even traces of nitrous acid into a tetra-azo salt, which is the agent that causes the blue color on exposure to air.

This reagent is able to reveal nitrous acid even in very dilute solution, the limit appearing to be 1 part (of sodium nitrite) in 6,400 parts of water. It has this advantage over metadiamidobenzol (or rather meta-phenyl diamine), formerly used as a color-test, that its solution may be kept unaltered for any time, while the last-named reagent was exceedingly prone to become colored by contact with the least trace of nitrous acid. The blue color produced in the reaction is not stable, and disappears slowly on exposure to air.

If the reagent is to be used in practice, it will be inconvenient to designate it by its chemical name, which is too long and unsuited for practical workers. It might be simply named: "Meldola's Reagent for Nitrous Acid," were it not that we have already too much of this sort of nomenclature.

Mercury in Sulphuric Acid.

COMMERCIAL sulphuric acid, both the common and the fuming, often contains traces of mercury which cannot be removed by redistillation. The quantity of the metal is, however, so small that it cannot be discovered by the usual reagents. Its presence may be established by diluting the acid with ten to fifteen times its weight of water, and suspending in it a golden needle, as a negative pole of a galvanic battery. After the current has passed a sufficient time, the needle is removed, washed with water and alcohol, then dried in an exsiccator, and finally heated in a glass tube closed at one end, and of which the other end is drawn out to a capillary diameter. On heating the needle, the mercury condenses in the capillary tube in microscopic droplets.

It is supposed that this fact may have important bearing upon certain pathological and physiological investigations. The above discovery was made in the course of an investigation to decide the question whether any sulphide of mercury (cinnabar) introduced into the circulation of the mother could pass over into that of the fetus.—DR. M. MIROPOLJSKY, in *Chem. Zeitung*.

Iodine in Human Urine After the External Application of Iodoform.

In a few cases of the application of iodoform, no iodine was found in the urine, but in all other cases in which poisoning did not occur, the iodine is present in the urine chiefly as potassium iodide, but to some extent also as iodate. In cases of poisoning by iodoform, the iodine is discharged not so much in the form of potassium iodide as in combination with organic compounds. From this it is concluded that if a means were discovered by which the iodine could be converted, before its absorption, into potassium iodide, a protection against poisoning might be secured.—J. GRUENDLER in *Chem. Centralbl.*

Preparation of Sodium Sulphide.

THE best yield is obtained when 45 parts of soda in solution are saturated with sulphuretted hydrogen, the solution being allowed to become warm; a solution of 55 parts of caustic soda is then added, and the whole allowed to crystallize.—A. DAMOISEAU in *Pharm. Journ.*

On the Physiological Action of Brucine and Bromo-strychnine.

THERE has been a considerable difference of opinion regarding the action of brucine, some saying that its action is like that of strychnine, but weaker; others that it was a bitter tonic, with little or no convulsive power. The reason of this difference of opinion is, I think, shown by some experiments which I have made with pure brucine, kindly given to me by Mr. Shenstone. From these experiments it appears that brucine has a convulsant action resembling that of strychnine, but the action is not only weaker in itself, but is so much lessened in the case of mammals by the rapid elimination of the poison as to give rise to no symptoms when the brucine is taken by the mouth. Its constant action is shown very distinctly when the brucine is injected in solution into the abdominal cavity, so that it is rapidly absorbed, and the whole, or nearly the whole, of the quantity administered is able to act upon the organism, there being no time allowed for its excretion. When it is taken into the stomach, on the other hand, excretion appears to go on *pari passu* with absorption; there is thus no large quantity of brucine at one time in the blood, and the animal does not suffer. A decigramme of the hydrochloride of brucine dissolved in 3 C.c. of water, and injected into the abdominal cavity of a white rat, began to act almost immediately. The animal cowered and shivered after the injection; in three minutes it was seized with an emprosthotonic convulsion and died. A similar quantity given to another rat, mixed with suet, so that the animal ate it readily, produced no symptoms whatever. The symptoms produced in a rabbit were peculiar. For a number of minutes after the injection, the animal seemed quite unaffected, then all at once it took a sudden run of a few steps, leaped into the air, and fell dead.

The difference between the effect of brucine and strychnine appears rather to be one of degree than of kind, and to be chiefly dependent on the more ready elimination of brucine. Brucine, like strychnine, produces death by convulsions and not by paralysis; but like curare, which is also a product of a species of strychnos, it is innocuous when taken into the stomach, though fatal when injected under the skin. I have not yet made comparative experiments between the action of brucine and iodide of methyl-strychnine, but on comparing the result of my experiment with brucine and those of Fraser and Crum-Brown on iodide of methyl-strychnine, it appears that the two have a different action, the brucine causing convulsions, whilst the iodide of methyl-strychnine produces paralysis. This is a curious point, and is well worthy of investigation, inasmuch as it may throw some light on the chemical constitution of the alkaloid. We find, apparently, a somewhat similar condition in the alkaloids of opium. By the introduction of alcohol radicles into morphine substances are produced to which the name of codeines has been given. In some these, such as codethyline, $C_{17}H_{15}NO_3O_2$, obtained from morphine by the introduction of ethyl, the narcotic action is diminished; whilst, according to Von Schroeder, the convulsant action is increased in proportion to the number of atoms of hydrogen substituted by alcoholic radicles. If such be the case, it is remarkable that, by the addition of alcohol radicles to codeine or thebaine, their tetanizing action should be altered into paralyzing action, methyl-thebaine producing paralysis like methyl strychnine.

Bromo-strychnine* has an action very

* This is a derivative from strychnine, by substitution of bromine in place of hydrogen, first described by the same author, in the same journal.

much like that of strychnine. In the pithed frog it causes clonic convulsions, which, like those of strychnine, may be brought on by a slight touch, jar, or external irritation. Like the convulsions of strychnine, they depend on alterations in the function of the spinal cord, and not on any action of the drug on the higher centres in the brain or medulla, as the effects occur when the brain is completely destroyed or when the head is cut off.—W. A. SHENSTONE, in *Journ. Chem. Soc.*, 1885, 143.

Action of Bisulphites on Chlorates.

ON treating sulphurous anhydride with chloric acid, sulphuric and hydrochloric acids are formed. The bisulphites of the alkalis, however, reduce the chlorates only in a very imperfect manner, as shown by the following equation: $NaClO_3 + NaHSO_3 = HClO_3 + Na_2SO_3$, and $NaClO_3 + 2NaHSO_3 = HClO + Na_2SO_3 + NaHSO_3$. The resulting hydrogen sodium sulphate may be made to react with further portions of bisulphite, sulphurous acid being disengaged. On adding a solution of sodium bisulphite to a concentrated solution of sodium chlorate (100 grammes per liter), a violent action occurs, especially if the solution of chlorate is hot. A strong odor of chlorine oxides and of sulphurous acid is given off, and the solution will be found to destroy the color of indigo and other dye stuffs, and convert cellulose into hydroxycellulose. With salts of aniline the solution forms aniline-black, a reaction which confirms Rosenstiehl's theory as to the formation of aniline black. When chlorates and bisulphites act on one another in the presence of alcohol, chlorinated ethers are formed.—PRUDHOMME, in *Dingl. Journ. and J. Chem. Soc.*

Test for Nitrous Acid.

FROM a paper on Detection of Nitrous and Nitric Acids by R. Warington, we quote the following paragraphs which may serve as a supplement to what we have published on this subject heretofore:

The Naphthylamine Test.

Attention was called by Dr. Griess to this reaction as one of extreme delicacy for the detection of nitrous acid. The liquid to be tested is treated first with sulphanic acid, then acidified, and a solution of hydrochloride or sulphate of naphthylamine added. If much nitrite is present, a deep ruby color is produced, the solution quickly becoming turbid by precipitation of the coloring matter; if only a trace of nitrite is present, the color will be pale pink.

Like the reaction previously described, the chemical changes consist of two stages, but as both of these will proceed side by side in an acidified solution, there is no advantage in postponing the addition of the naphthylamine. The reaction is not apparently facilitated by heat. Working in narrow test-tubes, and adding one drop of a saturated solution of sulphanic acid, one drop of dilute hydrochloric acid, and one drop of a saturated solution of naphthylamine hydrochloride, the following results were obtained.

With a solution containing 1 part of nitrogen as nitrite in 1 million of water, an immediate pink color was produced, rapidly deepening to a dark ruby tint.

With a solution containing 1 part in 10 millions, a pink tinge was almost immediately produced, deepening gradually to a full rose color.

With a solution containing 1 part in a 100 millions, a pink tinge first became perceptible at the end of six minutes; at the end of an hour, the solution was of a distinct pale pink color.

With a solution containing 1 part in 500 millions, no reaction was obtained for an hour or two, but a faint pink tinge was finally developed. In a large volume of solution, a distinct pink tinge was obtained with a dilution of 1 in 1,000 millions; but this color was barely perceptible in a three-inch column, unless a test tube containing pure water was placed by the side for comparison.

The naphthylamine reaction thus exceeds all others in delicacy. The color produced has the additional advantage of being permanent.—*Chem. News*, Jan. 23d.

Note on Alkaline Copper Solution as Reagent for Glucose.

E. J. MAUMENÉ has made a remarkable observation on the effect which the use of either potassa or soda in the preparation of the well-known reagent for glucose exercises upon its efficiency.

Maumené first gives a synopsis of the various solutions that have been proposed, or are in use, namely, those of Barreswil, Fehling, Boussingault, Pasteur, and Maumené. The latter is composed of 41.67 parts of sulphate of copper, 16.67 of tartaric acid, 8.7 of potassa, and 27.6 of soda, made up with water to 1,000 Cc. This solution does not produce any reaction whatever with glucose, even at the boiling point of water, unless another equivalent of potassa is added.

Wishing now to ascertain what difference there would be between solutions made with either potassa or soda exclusively, he prepared first a test liquid with potash as follows:

Sulphate copper 41.67 Gm.
Bitartrate Potass. 28.89 "
Caustic Potassa (K_2O) .. 10.44 "
Water to make 1000 Cc.

This liquid has a handsome sky-blue color, and acts upon glucose in the usual manner.

On now substituting an equal quantity of pure soda for the potassa, the liquid ceases to react with glucose. It has a more intensely blue color than the potassic liquid.—*Compt. Rend.*, vol. 100 (1885), 803.

Solubility of Carbolic Acid in Liquid Paraffin (Pharm. Germ.) and in Benzin.

DR. SCHWEISSINGER has examined the solubility of absolute carbolic acid in liquid paraffin (Germ. Pharm.) and in petroleum benzin of sp. gr. 0.059, with the following results:

1 part of carbolic acid is soluble in

20 p. of liq. paraffin at 44° C.
30 " " " " 32° C.
40 " " " " 24° C.
40 " " " " 20° C.
60 " " " " 17° C.

1 part of carbolic acid is soluble in

1 p. benzin at 43° C.	8 p. benzin at 20° C.
2 p. " " 42° C.	9 p. " " 27° C.
3 p. " " 41° C.	10 p. " " 25° C.
4 p. " " 39° C.	15 p. " " 23° C.
5 p. " " 37° C.	20 p. " " 21° C.
6 p. " " 35° C.	30 p. " " 19° C.
7 p. " " 32° C.	40 p. " " 16° C.

—*Pharm. Zeit.*

Cleaning Mortars.

SLONKI, of Nancy, recommends the following method for cleaning mortars which have been used in making preparations of iodoform. After having washed the mortar, or if greasy, having cleaned it with saw-dust, a little alcohol is poured in, ignited, and stirred about with the pestle. When all the alcohol is consumed, the mortar and pestle are washed with water, and all trace of iodoform will then have disappeared.—*L'Union Pharm.*

Detection of Morphine in the Urine of Morphine Tipplers.

NOTTA and LUGAN find that morphine taken internally may always be detected in the urine, if the quantity taken per day has not been less than 0.1 Gm. (or $1\frac{1}{2}$ grain).

To detect it, they propose the following process:

One liter of the urine is treated with one-tenth its volume of subacetate of lead solution. The coloring and extractive matter, phosphoric, and uric acids, etc., are thereby precipitated, and in the colorless liquid the morphine exists as an acetate, together with the substances which are not thrown down by the lead solution. The excess of lead is removed by the addition of diluted (1:10) sulphuric acid, and the sulphate of lead filtered off. Ammonia is now added, together with one-tenth (of the volume of the liquid) of warm amylic alcohol, and the liquid briskly shaken for a few minutes. On standing, the amylic alcohol will separate as a clear liquid holding the morphine in solution. By agitating the separated amylic alcohol with water acidulated with sulphuric acid, the morphine is separated as sulphate, and may then be isolated and determined in the usual manner.—*Union Médicale*.

Shark-Liver Oil.

AN Irish pharmacist said to us the other day: "Do you know that in France they are obtaining Cod-Liver Oil from Sharks?" We did recollect having noted something to that effect, though in other words. It is difficult to credit the authenticity of a paragraph that has been going the round of the pharmaceutical press, which informs us that some enterprising American firm is making an artificial cod-liver oil by soaking herrings in olive-oil until it acquires a fishy flavor, then curing the herrings for sale and labelling the oil "secundum artem Ol. Gadui," etc. But it is perfectly true that a very superior quality of fish oil for medicinal purposes, to all intents quite equal to cod-liver oil, can be, and is obtained abundantly from the sharks which inhabit the Mediterranean. In the gulfs of Sicily, more especially that of Cantania, we have met with many varieties of the shark tribe, which, like the dog-fish of our own English coasts, are a constant source of annoyance to the fishermen, destroying their nets and feeding on the young fish which frequent those regions, or scaring them beyond the reach of the small boats. Some of these sharks are to be met with all the year, but the greater number arrive during the winter months when the water is cooler.

The oil obtained from the species of shark (*Squalus*) frequenting the Mediterranean is now abundantly met with in trade. The poorer classes of Italians buy it to light their houses. The quality used for this purpose is obtained over a naked fire by means of earthenware boilers; it has a dark color and a disagreeable odor, but it is cheap and economical for burning in lamps.

A better quality has been produced of late years in Sicily from the liver of the shark above mentioned, and this appears to be well suited for medicinal purposes. The livers are cut up into small pieces and thrown into water containing a little permanganate of potash ($\frac{1}{4}$ parts to 1,000). There the material remains for twelve hours. It is then transferred to a boiler constructed with a double bottom, the lower part of this vessel being filled with water. It is, therefore, nothing more than a large water-bath. By means of the regular equal heat thus obtained when the fire in the boiler is lighted, the oil is separated from the

fatty tissues and collected as it rises to the surface. Whilst the tissue is still warm it is subjected to the action of a press, by which a second and inferior quality of oil is obtained. The latter is cloudy and odoriferous. It is purified by stirring it about in water containing a little chloride of lime (250 parts of chloride of lime for 20,000 parts of oil). After standing for two days it is filtered. The product is opalescent, has a sweetish taste, and, in spite of its low price, is considered by many Italian practitioners to be quite equal in therapeutic properties to the ordinary cod-liver oil of trade.—*Chem. and Drugg.*

Existence of Glycyrrhizin in Several Vegetable Families.

GLYCYRRHIZIN exists not only in several species of Leguminosæ, but also in some plants of perfectly distinct families; for example, it occurs in large quantity in the rhizomes of *Polypodium vulgare*, which grows abundantly in the neighborhoods of Paris and Brest, and in the Vosges, also in the rhizomes of a variety of *P. semipennatifidum*, which grows on the temperate regions of the Andes. Both these plants are used as substitutes for licorice.

The best method of extracting glycyrrhizin is to treat the dried and powdered plant with acetic acid of 8°, mix the solution with alcohol, filter, evaporate the filtrate to a syrup, and add water, which dissolves out ammonium acetate and other impurities, but leaves the glycyrrhizin undissolved.

The paper concludes with a summary of the chemical history of glycyrrhizin.—E. GUIGNET in *Compt. Rend.*

Subnitrate of Bismuth Manufacture.

ON a recent trip through France and Germany we picked up a few practical notes, says a correspondent of the *Chemist and Druggist*, which we now extract from our diary. We found at Strasburg that the manufacture of subnitrate of bismuth had engaged the attention of two practical men, Schlagdenhauffen and Reeb. The process carried out there is simple and elegant: 1 part of bismuth nitrate in large crystals is rubbed up with 4 parts of boiling distilled water, and then 21 parts more of boiling water are added. The nitrate in large crystals, which forms the basis of the operation, is obtained from the nitric solution of the metal, this solution being still strongly acid. When these crystals are small, soft, and fragile it is a sign that the solution which produces them has been evaporated too far, and that there has occurred to some extent a formation of basic nitrate, which, later on in the process, will yield a subnitrate with a yellowish tinge. This is to be avoided. Well carried out, the process gives a subnitrate having a constant composition: 6 atoms of oxide of bismuth, 1 of nitric acid, and 9 of water; or, in 100 parts, oxide of bismuth, 79.86; nitric acid, 15.50; water 4.64.

This is a product very superior to some of the old-fashioned preparations, especially those in which, according to the old recipes, a certain quantity of chloride of sodium is used, which, of course, produces a corresponding, or equivalent proportion of *subchloride*. The subnitrate obtained, as above stated, by the action of boiling distilled water on the large crystals, is collected upon a cloth and only washed with two parts of water, after which it is immediately placed to dry in small parcels upon white filtering paper, and at a temperature which must on no account exceed 30° to 35° centigrade.

One thousand parts of crystallized

nitrate thus yield about 450 parts of subnitrate (corresponding to 320 parts of metallic bismuth). There remain, therefore, in the mother waters some 200 parts of bismuth (metal). This is entirely precipitated by carbonate of ammonia, or more economically, by carbonate of soda. When this *carbonate of bismuth* is recently precipitated and is still moist, it is easily dissolved in nitric acid, yielding a solution from which, with a little care, the large crystals of bismuth nitrate can be obtained. If dried, it had better be calcined and reduced to metallic bismuth, which can be easily achieved at a moderate temperature by taking for every 10 parts of the calcined (oxide of) bismuth, 2 parts of cyanide of potassium, 0.4 part borax, and 0.8 part charcoal; which mixture is fused in a Hessian crucible, and soon yields a large button of pure metal.—*Chem. and Drugg.*, April.

Separation and Determination of Methylic Alcohol in Presence of Ethylic Alcohol.

THE process is based on the fact that methyl oxalate dissolves readily in water, whilst ethyl oxalate is sparingly soluble, and both oxalates form with ammonia amides perfectly insoluble in water. In 10 C.c. of the alcohol in question, there are dissolved 10.8 Gm. oxalic acid, and the solution is saturated with hydrochloric acid gas. After standing for 24 hours in a well-stoppered bottle, 2 C.c. of the solution are mixed with 10 C.c. of water, shaken up and filtered. As methyl oxalate is completely soluble in water, there is obtained, on adding ammonia, more amide than if an equal quantity of pure ethylic alcohol had been employed. By a number of experiments we may ascertain the quantity of oxamide formed in the washing waters of the ethylic oxalates. For absolute alcohol the mean is 6.6. For methyl oxalate the mean is from 14.65 and 15 per cent on the quantity of the methylic alcohol.

If a mixture of methylic and ethylic alcohols is etherified, shaken up with water, and the filtrate mixed with ammonia to precipitate the amides, the proportion of methylic alcohol may be calculated from the quantity of oxamide obtained.

For every one per cent of methylic alcohol we obtain from 0.14 to 0.15, more than 6.6 per cent.—C. DE PONCY in *Chem. News*, March 6th.

Elimination of Phosphoric Acid in the Urine in Insanity and Epilepsy.

A. LAILLER's results (*Compt. Rend.*, 99, 572), obtained from many hundred analyses made while resident officer in a large asylum, agree with those of Mairet. In acute delirium, phosphoric acid and urea are eliminated in notable excess; in excitable mania the phosphoric acid is in slight excess, whilst the amount of urea is normal; and in simple insanity the urine has the normal composition. In acute or excitable lypemania, the amount of urea eliminated is abnormally high, whilst that of phosphoric acid is abnormally low. In simple lypemania the composition of the urine is normal.

In general paralysis the elimination of both phosphoric acid and urea is related to the general morbid conditions of the patient. At, or immediately after, epileptic seizures, the urine contains a high proportion of phosphoric acid and a low proportion of urea. If the seizures succeed one another rapidly, the proportion of both phosphoric acid and urea is increased; in the interval between seizures the urine has the normal composition.—*Journal Chem. Soc.*

CORRESPONDENCE.

Status of Hospital Stewards in the Army.

SIR:—I am informed that it was through the efforts of the American Pharm. Association that the Hon. Mr. Randall introduced a bill in Congress, last session, to raise the standard of hospital stewards of the army and naval apothecaries. Probably, another effort in the same direction could be made next session; for, surely, if any class of apothecaries in the world needs favorable legislation, it is the hospital stewards. Our social status is no better than that of the common soldier, and our wives and daughters are "snubbed" by the commissioned aristocracy, and classed with the washerwomen and servants of the officers. Our pay is the pitiful sum of \$30; our allowances, one room back of the hospital, with the post-surgeon's stables or in the hospital building, one stove, one ration per day, one cord of wood per month, and uniform allowances (quantity and quality) of a private soldier. Not long since, I, a graduate of pharmacy of ten years' experience in the profession, was ordered to "button up my blouse," and threatened with a court martial for appearing in other shoes than those issued by the government, which are heavier and coarser than those worn by plow-men, by a second lieutenant whose qualifications are doubtful, and who owes his appointment to the great, grand, and glorious position he occupies to the fact that his father is a politician.

Even commissary sergeants, whose duties are simply those of a grocery clerk, weighing out the coffee and sugar for the people of the garrison, and the quartermaster sergeant, who "bosses" the mules and wagons of his department, draw \$4 per month more pay than the hospital steward. We are required to not only compound all medicines used in the post, but to extract teeth, dress wounds, care for the sick, conduct the hospital mess, make weather observations, perform all clerical duty (not a small item by any means), assist the surgeon in charge in performing surgical operations, and during his absence often take entire charge of the medical department of the post. We are also responsible for all government property belonging to the hospital. To obtain this position, we are required to pass a technical examination "in English language, chemistry, pharmacy, materia medica and minor surgery, capacity for compounding and preparing medicines, physical condition, moral character, ability to control men and manage an ordinary hospital, as well as general aptitude for the position." (I quote the exact regulations on the subject.)

The stewards of the army united in a petition to Congress, last year, through our chief (the surgeon-general), for an increase of our pay to \$40, but our very inferior social and military status prevented it from having any weight, or more than receiving a passing notice. The naval apothecaries are not so bad off, not being enlisted men, and having the social standing of "warrant officers." The stewards have even appealed to be placed on an equality with the naval apothecaries, but in vain.

Cannot the American Pharmaceutical Association do something for us? We have made all efforts that we are able to make, many of us even spending half or more of our small salaries in that direction. We are not so "ambitious" as the March number of the AMERICAN DRUGGIST expresses it, but only anxious for justice and equity. We do not care to rank as lieutenants, for it matters little as to the title that may be given us; but, in justice to our

profession, give us a social and military standing a little above that of the private soldier, and pay enough to support our families without taking in washing to do it. Hoping to be assured that an early effort will be made to lift us out of the slough of despond, I remain yours truly,
HOSPITAL STEWARD U. S. ARMY.

Pharmaceutical Legislation in Michigan.

Editor of American Druggist.
DEAR SIR:—In an editorial in your April number, you express a good deal of surprise that it should have been considered necessary to eliminate the sections relating to adulterations, and the sale of poisons from the Michigan pharmacy bill, in order to enable the bill to pass. The sections referred to were not removed simply to secure the passage of the bill, but to render the bill constitutional, in the event of its passage.

The constitution of the State of Michigan, sect. 20 of Art. IV., provides that "no law shall embrace more than one object, which shall be expressed in its title." In view of the possible danger that the courts might construe "the practice of pharmacy," "the sale of poisons," and "the adulteration of medicines," as being each a separate object, and thus destroy the validity of the law, it was deemed prudent on the part of the committee in charge of the pharmacy bill, acting under competent legal advice, to remove the sections referred to. There is now a "poison act," and also an "adulteration act," on the statute books of the State, and should further legislation be desired in these directions, the present laws can either be amended, or other laws passed to take their place.

Yours respectfully,
GEO. McDONALD,
Chairman of Committee on Pharmacy Bill.

KALAMAZOO, MICH.

Source of Todd's Menthol.

SIR:—Mr. Christy, in his letter 1,450, in reply to your answer to "C. A. D.," 1,414, after saying you have had it recorded in your paper that he is the introducer of the Japanese menthol plant, makes a statement that he furnished Mr. A. M. Todd with his stock of plants.

I have always understood that Mr. Todd manufactured his menthol from *Mentha piperita* and on this account his menthol was distinguished from the Japanese article by having the name "Pipmenthol." Now, does Mr. Todd make his menthol from *M. piperita* or *M. arvensis*?

"MENTHOL."

Composition of "Patents."

Editor American Druggist.
SIR:—In the April number of the DRUGGIST I see the formula of Hamlin's Wizard Oil, asked for. Here is a fair imitation, if not the genuine.

- R Water of Ammonia . . . ½ ij.
- Spts. Ammonia Aromat . . . ½ ss.
- Sulph. Ether 3 i.
- Oil Sassafras,
- " Cedar,
- " Gaultheria,
- Tr. Myrrh,
- " Camphor 55 3 ss.
- " No. Six 3 vi.
- Chloroform 3 ij.
- Alcohol q. s. Oi.

M.
The DRUGGIST is read with pleasure by
A. Q. NASH.
SHERMAN, TEXAS.

American Druggist.
In Queries and Answers you ask for formulæ for Barel's Indian Liniment and Hamlin's Wizard Oil. The following are those we have frequently used:

- BAREL'S INDIAN LINIMENT.
- ℞ Tr. Capsicum 1 oz.
- Oil Origanum,
- Sassafras,
- Pennyroyal,
- Hemlock 55 ½ oz.
- Alcohol 1 qt.

- M.
- HAMLIN'S WIZARD OIL.
- ℞ Spts. Camphor 2 oz.
- " Ammonia,
- Ol. Sassafras,
- " Turpentine,
- Chloroform 55 1 oz.
- Oil Cloves ½ oz.
- Alcohol q. s. 10 oz.

M.
Yours Truly,
W. H. & SON.

MONROE, MICH.
Inclosed find formula for Hamlin's Wizard Oil, as asked for in your journal of April, taken from Kilner's "Modern Pharmacy and Druggists' Formulary," viz.:

- Tinct. Camphor 1 ounce.
- Water of Ammonia ½ "
- Oil Sassafras ½ "
- Oil Cloves 1 dr.
- Chloroform 2 "
- Oil Turpentine 1 "
- Alcohol 3 ½ ounces.

Mix.
Yours respectfully,
H. and W. KEPHART.
BERRIEN SPRINGS, MICH.

Abbreviations of Metric Terms.

THE International Congress of Metrical Weights and Measures has adopted the following new abbreviations. *Italics are to be used, and are not to be followed by a period.* The abbreviations are to be written on the same line as the figures, and after the last of them, be the number either an entire one or a decimal:

Length.	
Meter	m
Decimeter	dm
Centimeter	cm
Millimeter	mm
Kilometer	km
Surface.	
Square meter	m²
" decimeter	dm²
" centimeter	cm²
" millimeter	mm²
" kilometer	km²
Hectare	ha
Are	a

Volume.	
Cubic meter	m³
" decimeter	dm³
" centimeter	cm³
" millimeter	mm³
" kilometer	km³

Capacity.	
Liter	l
Deciliter	dl
Centiliter	cl
Hectaliter	hl

Weight.	
Kilogramme	kg
Decagramme	dkg
Gramme	g
Decigramme	dg
Centigramme	cg
Milligramme	mg
Ton of 1,000 kilogrammes	t
Quintal of 100 "	q

Simple Method of Examining Yeast.

A SMALL piece of the compressed yeast is placed in a wine glass which is filled with water at 25°. If the yeast is active, it will rise to the surface in 1½–2 minutes; if less good it will require 5 minutes before it rises. Bad yeast will not rise at all.—O. MEYER in *Bied. Centr.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,493.—Cocaine (M. O.).

This correspondent asks our opinion on the correct pronunciation of the word *cocaine*, which one of our contemporaries has recently said should be pronounced as if it were spelled "kokane," with the last syllable having the same sound as the verb "maintain."

In reply, we have to say that we do not think this pronunciation at all tenable. There may be some arguments advanced in favor of "fonetic riting," but we do not think a converse process applicable to pronunciation. The termination *ine* (pronounced *een*) is regularly used in the case of all alkaloids. This is affixed either to the unaltered name of the drug or plant, as, for instance:

Ergot-ine,
Piper-ine,

or the termination of the name of the plant is curtailed or altered for euphony's sake:

Caffea: caffe-ine (three syllables)
Spartium: sparte-ine "
Similarly: code-ine "
" theba-ine "
" narce-ine "

Consequently we have from

Coca: coca-ine (ko-ka-een.)

No. 1,494.—Ferro-Phosphated Elixir of Calisaya and Strychnine (R.).

This correspondent wants a formula for this preparation, which could be made from some of the more simple elixirs contained in the N. Y. and B. Formulary.

We would suggest that he start with No. 14, viz., *Elixir Cinchonæ et Ferri*, and add to it the usual amount of strychnine. The formula would then be:

Phosphate of Iron (U. S. Ph., 1880)..256 grs.
Citric Acid..... 5 grs.
Sulphate of Strychnine..... 2½ grs.
Boiling Water..... 1 fl.oz.
Compound Elixir of Quinine
enough to make.....16 fl. oz.

Add the phosphate of iron, sulphate of strychnine, and citric acid to the boiling water, and dissolve. Then add enough compound elixir of quinine to make 16 fl. oz., and filter.

Each fl. drachm contains 2 grs. phosphate of iron and ½ gr. sulphate of strychnine.

For the benefit of readers who do not have the N. Y. and B. Formulary at hand, we repeat here the formula for *Elixir Quinina Compositum*.

Sulphate of Quinine.....16 grs.
Sulphate of Cinchonine..... 8 grs.
Simple Elixir.....16 fl.oz.

Triturate the alkaloid salts with a portion of the elixir, then mix with the remainder, and agitate until the salts are dissolved. Finally filter.

No. 1,495.—Sulphur Disinfection.

If properly performed, this is amply efficient in all cases where organic life, as the cause of infection or nuisance, is to be destroyed. It is in-

fallible with all larger or smaller animals, and also with insects. In the case of certain bacteria, some doubt has been thrown on its efficacy, but if long enough continued and properly carried out, it will probably accomplish the purpose in the end.

In the French Army Formulary (or Military Pharmacopoeia) great stress is laid on the efficacy of sulphur vapor as a destroyer of parasites and insects in barracks, stables, etc., and against contagious germs in general, even such as have penetrated into the walls.

In the collective experience of French army surgeons, 30 Gm. (1 avoird. ounce) of sulphur is sufficient for each square meter (35.3 cubic feet) of space. A sanitary commission at Val-du-Grâce, examining the subject in 1881, ascertained that 15 Gm. is enough in all ordinary cases. Sometimes, however, 30 are required; sometimes, and as it is better to err on the side of safety, the commission recommended to use the larger quantity at all times. During an epidemic still larger quantities may be used.

No. 1,496.—Aromatic Ammoniacal Tincture (Dr. J.).

The above title which our correspondent met with in a translation from a French journal refers, without doubt, to the French equivalent for our aromatic spirit of ammonia, or *Alcoolatum aromaticum ammoniacale* (*Alcoolat aromatique ammoniacal*), which is prepared as follows:

	Gm.
Fresh Orange Peel.....	100
Fresh Lemon Peel.....	100
Vanilla.....	30
Ceylon Cinnamon.....	15
Cloves.....	10
Chloride of Ammonium.....	500
Carbonate of Potassium.....	500
Distilled Cinnamon Water.....	500
Alcohol, 80%.....	500

Cut the orange and lemon peel, and the vanilla, reduce the cloves and cinnamon to coarse powder, and introduce the mixture into a glass-retort, together with the chloride ammonium, cinnamon water, and alcohol. Let it macerate 3 or 4 hours, occasionally agitating. Then add the carbonate of potassium, mix thoroughly, and, after several hours, distil on a water-bath until 500 Gm. of distillate have passed over.

The product becomes soon colored when exposed to light.

No. 1,497.—Bleaching Straw Hats (A.).

This correspondent is the proud possessor of a very fine Panama hat which he desires to bleach himself, evidently in anticipation of the approaching season. If we were in his case, we would intrust the task to some professional hat-bleacher, who would accomplish the object probably more quickly, cheaply, and with less trouble than we could do it ourselves. However, as he is bent on the undertaking, we will describe a process:

First wash the hat, freed from all trimmings, lining, etc., thoroughly with soap-suds, using a soft brush. Then rinse it thoroughly, until every trace of soap or alkali is removed. Having dissolved 8 oz. of hyposulphite of sodium in 2 gallon of water, immerse the still moist hat in this liquid (using more of it, if necessary, of the same strength), and leave it for about 15 minutes. Then take it out, add to the liquid 8 oz. of common hydrochloric acid, mix quickly, and at once re-immerses the hat. The bleaching action due to the separation of sulphurous acid takes place, not only on the surface of the fabric, but also in the straw fibres themselves, as they had previously soaked up some of the hyposulphite solution. The hat should remain in the liquid for at least

half an hour, during which time the vessel should be kept well covered.

If one bleaching is not sufficient, the process may be repeated.

Another method is to immerse the hat in a solution of permanganate of potassium in water (1 oz. to 1 gallon) and afterwards in dilute hydrochloric or sulphuric acid.

No. 1,498.—Chinoline (S. S.).

This artificial alkaloid, which was used some years ago (in form of tartrate) as an antipyretic, is now no longer employed medicinally, owing to certain drawbacks connected with its administration, chief among which is the peculiar aroma and taste which are disagreeable to many persons.

Chinoline, however, has been the starting point for the discovery of several other very valuable antipyretics which are derived from it. One of these is kairine (now also going out of use), and another is antipyrine, which latter still maintains its reputation as an efficient substance for reducing febrile temperatures.

Concerning the chemistry of chinoline, it may first be noted that this substance was discovered by Runge in coal-tar, in 1834, and termed "leucol" (*white-oil*). Gerhardt afterwards (1842) obtained it by distilling cinchonine with caustic potash. Finally, A. W. Hofmann (1843) showed that chinoline is identical with Runge's leucol. Since then chinoline or quinoline has been prepared artificially by several methods, but it was not until 1880 that Skraup (and Koenigs) discovered a simple process by which it could be prepared cheaply and on a large scale. The process is as follows:

Mix 24 parts of nitrobenzol, 38 parts of aniline, and 120 parts of glycerin, in a flask of the capacity of 2,000 parts, and provided with an upright condenser. Next add 100 parts of concentrated sulphuric acid, and shake the mixture until the aniline sulphate, which had been formed, is entirely dissolved. Then heat on the sand-bath until when the reaction begins, remove the flask until reaction slackens, and continue alternate heating and withdrawing heat until but little unaltered nitrobenzol is present. Now add water, and drive over the unchanged nitrobenzol by heat. Render the residue alkaline, and drive over the mixture of chinoline and aniline either by steam, or extract them by ether. Separate these two bodies as much as possible by fractional distillation, and remove the last traces of aniline by treating the base in sulphuric acid solution, with bichromate of potassium. When the oxidation is completed, render again alkaline, and drive the chinoline over by steam. The yield of pure chinoline amounts to 70 to 75 per cent of the mixture of aniline and nitrobenzol.

Chinoline is a colorless liquid, boiling at 238° C., of spec. grav. 1.094 at 20° C. With acids it forms crystalline salts.

In its chemical constitution it may be regarded as naphthalin (see the diagram in our last volume, page 239), in which one CH group is replaced by nitrogen.

No. 1,499.—Glycerite of Tragacanth (M. S.).

An improved formula for this preparation has lately been proposed by the permanent Pharmacopoeia Committee of the Germ. Pharm. Association. It is as follows:

Tragacanth, powd.....	1 part.
Alcohol.....	5 parts.
Glycerin.....	100 "
Wheat Starch.....	10 "
Water.....	15 "

Triturate the tragacanth with the alcohol, then add the glycerin and the starch, previously mixed to a smooth

milk with the water, and heat on the steam-bath until the mixture is of the proper consistence.

No. 1,500.—Glycerite of Alum (F.).

This preparation was recommended some time ago by Dr. R. W. Parker (*Brit. Med. Journ.*, January 24th), as a substitute for glycerite of tannin, as a powerful local astringent. It is less harsh than tannin, and is not incompatible with iron salts. It may be used diluted with water, as a gargle or wash, or even as an injection. It is prepared by dissolving

Powdered Alum.....1 part
In Glycerin.....5 parts

with the aid of a gentle heat.

No. 1,501.—Cantharidal Collodion ("Ana").

Cantharidin has been proposed repeatedly for preparing this collodion. One of the last formulas which we have seen is that proposed by Eugen Dieterich, the well-known German manufacturer of plasters and other products.

Dieterich's original formula was:

Cantharidin..... 3 parts
Collodion.....1,000 "

and this would have corresponded to the quantity of cantharides prescribed by the German pharmacopœia for blistering collodion, namely, 50 parts of cantharides represented by 50 parts of the product.

It was, however, subsequently found that a portion of the cantharidin crystallized out when the temperature fell, until only 1½ parts remained in solution. But as the product even now acted quite energetically, it would be a waste to make the solution stronger. Dieterich, therefore, proposes the following formula for

Collodium cum Cantharide.

Cantharidin 3 parts
Collodion.....1,900 "
Oil of Rape..... 97 "

The oil of rape is added for the purpose of rendering the collodion elastic or flexible.

The blistering collodion of the U. S. Pharm. is considerably weaker than that of the German Pharm., 100 parts of the product corresponding to only 60 parts of cantharides instead of to 100 as in the German.

Dieterich also drew attention to the fact that the new French Pharm. (Codex) required cantharides to contain 0.5 per cent of cantharidin. According to his own experience, however, the quantity never exceeds 0.3 per cent. Hence the above figure must be an error.

No. 1,502.—Cannabinon (J.).

This is the name of a new product recently prepared from Cannabis indica, and put upon the market. It was at first prepared only by one firm, but is now also manufactured by E. Merck and others. When cold, it has the consistence of a soft extract, when heated it appears as a viscid, brown balsam, transparent in thin layers, of a strongly aromatic odor and a sharp, bitter, and somewhat scratching taste. It is insoluble in water, easily soluble in alcohol, ether, petroleum ether, chloroform, benzol, bisulphide of carbon, ethereal and fixed oils. The solutions are golden-yellow when strongly diluted, brown when concentrated. When heated on platinum foil it leaves no residue. Its true chemical nature is not known.

The experience of practitioners so far on record shows that cannabinon acts as a sedative and soporific, in doses of 0.05 to 0.1 Gm. (½ to 1½

grains), without producing disagreeable effects on waking.

Owing to its soft consistence, it is not easily dispensed in its original condition. Merck, therefore, has prepared from it a 10 per cent trituration in form of a dry, brown powder, the average dose of which is about 0.7 Gm. (ab. 10 grains).

No. 1,503.—Local Pharmaceutical Organizations (Inq.).

We are informed by the secretary of the N. Y. State Pharm. Assoc. that besides the organizations in New York City and Brooklyn, there are county organizations in Albany, Erie, Broome, Chemung, and Steuben counties.

No. 1,504.—Lafayette Mixture (T. A. F.).

This is a gonorrhœa mixture much used in this section of the country. In New York it is very generally used in the hospitals and dispensaries. Its formula is as follows:

Balsam of Copaiba.....½ fl. oz.
Spirit of Nitrous Ether.....½ " "
Comp. Spirit of Lavender.....½ " "
Solution of Potassa.....1 fl. dr.
Mucilage of Acacia enough
to make.....4 fl. oz.

Mix the balsam with the solution of potassa, then add the two spirits. Put the requisite amount of mucilage into a bottle, pour the other mixture on top, and mix the whole by agitation.

In some institutions, it is customary to use equal volumes of mucilage and syrup instead of mucilage alone.

No. 1,505.—Druggists' Formulary (J. A. R.).

This correspondent asks for "the name of some reliable druggists' formulary or handbook, where he can obtain price, etc.," and his query is capable of two constructions, viz.: he may wish a formulary in which he can also find the cost of ingredients, or else, the name and price of a formulary. If the former, we cannot answer. If the latter, there are numerous useful formularies, for instances: Griffith's Universal Formulary (last edition by Maisch); the New York and Brooklyn Formulary, Fenner's, Nelson's, and others, the cost of all of which had better be obtained from some regular book-dealer, as, for instance, J. H. Vail & Co., 21 Astor Place. It is out of our power to pick out one from among the list, as we cannot know what our correspondent expects to find in them. If he can afford it, he should procure them all.

No. 1506.—Syrup of Dover's Powder (Inquirer).

Mr. Frank U. Ferguson gives the following formula, in the *Weekly Drug News*:

Dover's Powder (U. S. P. '80) .640 grains.
Water.....q. s.
Glycerin2 oz. av.
Sugar.....12 oz. av.

Macerate the Dover's powder in about 8 fl. oz. of water for about twenty-four hours, then filter and add enough water through the filter to make the filtrate measure 8 fl. oz. To the filtrate add the sugar, and dissolve with a gentle heat; then add the glycerin and strain.

The finished syrup represents in one fluidrachm five grains of Dover's powder.

No. 1,507.—Sale of Liquors (B. F. R., Mass.).

We are asked the following question: "Can a druggist sell liquor on a physician's prescription in a town where there are no licenses granted?"

A lawyer would tell our inquirer, that the question is too general to be answered categorically. All concomitant circumstances, conditions, existing laws, ordinances, and judicial decisions bearing on the subject should

be carefully considered in deciding the point. However, we can say the following.

In the first place, we hold that the physician has an unalienable right to prescribe for his patient, and the pharmacist an unalienable right to supply on the physician's order, any article that may be necessary to save the life or treat the malady of the patient, provided each of them is legally authorized to pursue his profession, and cannot be shown to have ordered or furnished the article (in this case, liquor) under false pretenses. This question, so far as we know, has never been decided by the highest courts, but if it ever is adjudicated there, we have no doubt it will be decided in this sense.

The right above vindicated for physicians and pharmacists may, however, be regulated to a certain extent by legislation. Should any State enact a law of prohibition, for instance, this prohibition could never extend to the total suppression of alcoholic liquids, even for use in the arts or in medicine; for this can be construed as opposed to the Constitution of the United States. But when a State restricts the sale of alcoholic beverages, it has a perfect right to establish special regulations how such liquids may be obtained, and under what conditions they may be used for technical or medical purposes, and it has also a right to establish special depots for their sale, or appoint special persons who alone may sell them. If there is, for instance, a special person officially authorized, in the town of our correspondent, to sell alcoholic liquids to persons presenting valid vouchers for the same, and if, at the same time, the law interdicts all other persons from selling such liquids, we think the law will stand, as the right of the people to make use of these liquids is not interfered with, and the State adopts this system only with a view of preventing these liquids from being used for illegitimate purposes.

Supposing again, there is no such official agent or person in a town, and the town-authorities, at the same time, have refused to grant licenses to liquor dealers, so that, in fact, there is no person in the whole place who is expressly authorized to sell—even restrictedly—any alcoholic beverage, then we hold that the pharmacist has the right, in a *bona fide* case, to fill a physician's prescription for liquor. But this must be done in such a manner that no doubt can be raised as to the legitimate use of the article.

We will not argue, in this place, on the wisdom of prohibition or license (though our strong conviction is on the side of the latter). But when the people in a town have once decided—and have been apparently by law authorized to decide—that the promiscuous traffic in liquor should be suppressed, it is a necessary consequence that they shall be entitled to adopt regulations to accomplish this. A pharmacist, then, residing in the town, must bear his share of responsibility and burden. But, in our humble opinion, we do not think that the people have a right to step between the patient and the physician, and to say to the latter, "this drug and this substance you may be allowed to use, but that substance you shall not use, no matter whether in your judgment the patient may need it."

No. 1,508.—Soluble Essence of Ginger (J. S., Philadelphia, Pa.).

Of course, there is no such thing as a regular fluid extract of ginger which is soluble in water. The resin and volatile oil on which the pungency and aroma of ginger depend can only be made partially to dissolve in water. The resin can be rendered much more soluble than the oil by combination with an alkali. So far as we know, Tresh's

method is probably the best. It is as follows:

Take of strong tincture of finest Jamaica ginger 1 pint. Add to it small proportions at a time of finely powdered slaked lime, until the tincture ceases to lose color, throw the whole upon a filter and pass through the residue diluted alcohol, until the product measures two pints. Now add drop by drop diluted sulphuric acid, until the rich yellow color suddenly disappears, let stand for 24 hours, filter, dilute with water to 4 pints, then shake with a little powdered pumice or silica (*by no means* lime or magnesia), and filter it at 0° C., if possible. As the lime is added, the color deepens, but becomes lighter with greater additions. The product is very pale, but may be darkened by adding a drop or two of potash solution. The *Chem. and Drugg.* commented on this, saying: Working on somewhat similar principles, we have mixed the tincture with its own bulk of water before adding the lime, then mashed the lime with a little proof spirit, mixed the two liquids, shaking finally with fine sand, and laid aside until required, then filtered. The aroma may be improved by the addition of a few drops (to the pint) of essential oil of ginger.

No. 1,509.—Pharmaceutical Still (J., Minneapolis, Minn.).

This correspondent wants to know which pharmaceutical still obtainable in the market is the most practical one for a pharmacist's laboratory.

This is a question which we cannot answer point-blank. If any one has been in the habit of using a particular kind of still, it is quite natural that he will prefer it to some other form or make. Again, there are features connected with one kind of still which may not be connected with another. As we have not tried any of the stills sold in the market ourselves, but have used our own design and construction, we can only say that those who have used the stills mentioned by you, and whom we know, have generally been fully satisfied by their working.

No. 1,510.—Ferrated Wine of Wild Cherry (G. P. H., Ellsworth, Kan.).

We have used the following:

1. *Wine of Wild Cherry.*

Wild Cherry Bark..... 4 oz.
Angelica Wine..... 8 fl. oz.
Water q. s.
Sugar..... 2½ oz.

Macerate the Wild Cherry Bark, which should be in coarse powder, in 8 fl. oz. of water in which the sugar had previously been dissolved, for 12 hours. Then strain, wash the bark with enough water to obtain 8 fl. oz. of infusion and mix this with the wine.

2. *Ferrated Wine of Wild Cherry.*

Tasteless Tincture of Iron..... 640 min.
Wine of Wild Cherry, to make... 16 fl. oz.

Whether this has the same taste and appearance as the particular commercial brand you mention we cannot say, as we have no personal experience with the latter.

No. 1,511.—To Make Cisterns and Tanks Water-tight (D. F. V.).

Our correspondent refers to a formula published by us in *NEW REM.*, 1881, p. 190, which is as follows:

"Paint thickly on the inside with a mixture composed of 8 parts of melted glue and 4 parts of linseed oil boiled with litharge. In forty-eight hours the application will have hardened, so that the cistern or tank can be filled with water."

He wants further instruction regarding the preparation. We regret that we cannot now trace the source of the formula, but we can give this much of information, that the boiling of the

linseed oil with the litharge (of which about 30 parts are necessary for every 1,000 parts of the oil) has for its object to render the linseed oil more rapidly drying. In fact, it makes it what is generally called "boiled linseed oil." "Melted glue," of course, means glue that has been soaked first in cold water, then drained, and afterwards melted. It is impossible to melt dry glue by heat. If this is attempted, the glue will turn to whitish bean-like lumps caused by a sudden dissipation of excess of moisture, and afterwards will become dark colored, give out offensive odors, and burn.

The glue having been soaked and melted, should then be raised to a temperature considerably above the boiling point of water, care being, however, taken that it does not become burned. When quite hot, the boiled oil is stirred in, and in a few minutes afterwards the mixture will be ready for application. It must be kept hot, since it becomes solid and tough as it cools. We have tried it on paste-board boxes, and have found it to make them water-tight.

No. 1,512.—Golden Hair-Dye (F. D. B., Darlington, Ind. Ter.).

The best agent to produce a "golden" tint on dark hair is peroxide of hydrogen solution, cautiously and repeatedly applied. The hair must be thoroughly cleansed first, so as to remove all fatty matter, and may then be treated with the peroxide in moderately dilute (not over 5%) solution. If the tint of the natural hair is light, peroxide of hydrogen will not do. Natural hair on the human head should never be continuously or frequently dyed with metallic salts, but if, for some special occasion, a dye is needed, the following may be used to produce this tint. Take a solution of chloride of tin (stannic chloride), diluted with a sufficient amount of water, and moisten the hair with it. Then apply a dilute sulphide of ammonium solution, which should be freshly prepared and colorless. The latter is obtained by saturating a quantity of water of ammonia with hydrosulphuric acid, and then adding an equal volume of water of ammonia.

No. 1,513.—Preserving Fruit (Wm. K., Mexico).

Our space permits us to give only a condensed account of the processes. There are several methods, differing chiefly in the preservative agent employed, the most common being that in which sugar is used.

1. *Preserving with Sugar.*

The fruits must be carefully selected, as fresh and sound as possible, and not too ripe. For each pound of fruit one pound of best white sugar is taken, one pound of water added, and heated in a clean copper or enamelled boiler slowly to boiling, care being taken that the sugar is dissolved before the syrup boils. The syrup is carefully skimmed and poured over the fruits, or the fruits placed in the syrup, the whole raised once more to boiling, and the liquid then drained off the fruits. It is boiled down until it begins to be slightly viscid; the fruits having been put into the preserving vessels, the thick liquid is poured on so as to entirely cover them. If possible, the vessels should be placed for a short time in boiling water, after which they must be securely closed.

The above method will only answer with fruits which are not easily broken or disintegrated by the process—for instance, with pine-apples, pears, etc.

Delicate fruits are simply covered with boiling syrup. In certain cases the process needs some modification, but the nature of the fruit itself will generally suggest this.

Cold syrup may also be used, provided it has previously been thoroughly boiled and skimmed, and treated

with salicylic acid, of which from 100 to 200 grains may be used for every gallon of syrup.

2. *Preservation without sugar.*

This may be accomplished in various ways.

The fresh fruit may be placed in tin cans of proper size, which must be completely filled and then soldered up. A small pin-hole having then been made in the top of each can, and the cans having been placed into a vessel containing hot water, reaching to within about one-half inch of the top of the cans, heat is applied to the water-bath until all the air is expelled from the cans, when the holes are immediately soldered up. On cooling, a vacuum will be produced, and the top and bottom of each can will appear slightly depressed inwards.

A good plan is to put the cans into the empty boiler or water-bath, and then to pour boiling water into the latter. By contact with the cans this will lose much of its heat, but on subsequently re-heating it care must be taken not to raise it to a boil. The most suitable temperature is about 200° F. To ascertain when all the air has escaped from the cans, place a drop of water now and then over the pin-hole. When the drop is no longer disturbed by escaping air, solder the can up.

Very good results are obtained by employing certain chemical preservative agents. Among these are:

Bisulphite of sodium, of which an aqueous solution may be made, 1 to 2 oz. to the gallon, which may be poured over the fruit, previously cleaned and peeled. The bisulphite has also a bleaching effect, and is, therefore, chiefly suitable only for such fruits as are naturally without much color, such as pears, peaches, apples, etc. The fruit preserved in this manner is, of course, not suitable to be eaten *as such*, like sugar-preserved fruit, but needs further culinary preparation.

There is so little of the bisulphite retained in the fruit that the latter, even when eaten unprepared, would be perfectly harmless. The further treatment of the fruits, however, entirely destroys this salt, and leaves only its products of decomposition.

Some years ago a preserving salt was announced in Germany, which was said to be produced by melting together 4 mol. of crystallized boric acid and 1 mol. of phosphate of sodium at 120° C., whereby an acid phosphate of sodium is produced, which "is then further melted at 130° C., together with an equivalent quantity of nitrate of potassium and chloride of sodium. When cold, the product has a glossy appearance, has an acid reaction, is soluble in 3½ parts of water. It is said that from ½ to ¼ oz. of this salt [presumably dissolved in sufficient water to cover the fruit] is sufficient to preserve two pounds of fruit.

Another good preservative agent is *boroglyceride*, about which full information will be found in previous volumes of this journal (for instance, 1884, p. 41), of which a watery solution, containing about 5%, may be used.

Salicylic and boric acids are likewise excellent preserving agents. The former has at one time been reported to be injurious, as it was said to impair the generative functions. But this is no longer maintained, at least for the small quantity of the salt likely to be taken with the food preserved by it.

Boric acid has also been repeatedly warned against as being injurious, but the leading authorities declare it to be entirely innocuous.

A saturated solution of boric acid, therefore, may be unhesitatingly used. For preparing this, about 18 grains of boric acid are required for each fluid ounce of water.

Glycerin has also been recommended as a good preservative. The direc-

tions are to dilute it with 3 parts of water, and to cover the fruit with it. We have no knowledge of any recent practical experiments with this process.

When salicylic or boric acids are used as preservatives, it is recommended to add a little sugar to the liquid to prevent the fruit from becoming stringy or tasteless in the course of time.

No. 1,514.—Treatise on Practical Pharmacy (L. F. M.).

The best works on this subject are the following:

Parish's "Treatise on Pharmacy."—Proctor's "Lectures on Practical Pharmacy."—The United States and National Dispensatories.—Hager's "Technik der Pharmaceutischen Receptur."—Hager's "Handbuch der Pharmaceutischen Praxis."—Bernatzik, "Arzneiverordnungslehre," vol. i. Many others could be mentioned, but the above will probably cover the ground sufficiently. Prof. J. P. Remington is preparing a work for publication, which will probably combine the best features of the leading works now in existence.

No. 1,515.—Family Dyes (W. F. S.).

Your question regarding the composition or nature of the special dyes you mention can be answered by stating that, to the best of our knowledge, they consist of various aniline or other coal-tar colors, suitable for immediate use, and not requiring complicated processes of mordanting, etc. We did not mention the name of the dyes you specially inquire about, as there are others in the market of the same nature, and all are derived from the large aniline dye-works of Europe. Besides, we are unable to say what grade or quality this particular firm uses. By submitting a sample to an expert dyer, or dealer in dyes, you will probably obtain the desired information.

No. 1,516.—Removing Vegetable Coloring Matter from Alcohol (Green, Wis.).

This correspondent writes:

"I have a quantity of alcohol which has been used for percolating Senna leaves to remove the gripping principle previous to making a fluid extract. How can I remove the coloring matter, without distillation, so that the alcohol may be used in liniments, or (if suitable) in tincture of arnica, etc.? Charcoal does not answer the purpose; is there any simple process for accomplishing this?"

In reply, we have to say that there is none. Our correspondent's object evidently is to merely get the alcohol colorless, without caring whether it still retains in solution any extracted matters. Yet there is no way to accomplish this short of distillation. Surely this is a simple operation, and requires but little apparatus and skill.

No. 1,517.—Cleaning Bottles which had Contained Essential Oils.

These are best cleaned by first rinsing them once or twice with a little alcohol or tincture of soap-bark (made with strong alcohol). Afterwards the bottle is rinsed with water, and a little permanganate of potassium (about two drachms for a pint bottle, in some cases more) is added together with some hot water and a little hydrochloric acid. The bottles are well shaken and then rinsed with water. This may be repeated.

Or, after the alcohol has been poured out, and the bottle has been rinsed, a solution of hyposulphite of sodium is added, and then a little hydrochloric acid. This generates sulphurous acid gas, and sulphur is precipitated. The mixture is well shaken about, and the bottle then rinsed with water. It will generally be found that a fine film of

the precipitated sulphur adheres to the inner walls of the vessel. This fine deposit must be removed with the aid of a bottle brush, or by shaking shot or fine gravel about in the bottle.

The alcohol which has been used for rinsing the bottles may be utilized for any ordinary purposes.

No. 1,518.—Paper Bottles (C. H. B., New York).

This correspondent desires to know whether anybody makes or intends to make, in this country, the paper bottles recently put on the market in Germany, which were described in recent issues of this paper.

Perhaps some of our readers can supply the information. It would probably suit our correspondent equally well if he could be supplied with the name of an American firm, having the foreign-made bottles for sale.

No. 1,519.—Bay Rum (Subscriber).

1. For one formula, we refer you to the U. S. Pharm., 1880, page 310, the ingredients of which are:

Oil of Myrcia.....	16 parts.
" " Orange Peel	1 part.
" " Pimenta.....	1 "
Alcohol.....	1,000 parts.
Water.....	732 "

To make.....1,800 "

2. Another formula:

Tincture of Bay leaves (1 of Bay leaves, 20 of alcohol).....	6 oz.
Oil of Bay.....	1 fl. 3
Borax.....	1 oz.
Carbonate of Ammonium	1 oz.
Rose-water.....	1 quart.

(This is from a European source, and yields a product much differing from the genuine, but quite pleasant.)

3. Another:

Oil of Bay.....	10 fl. 3.
" " Pimenta	1 fl. 3.
Acetic Ether.....	1½ fl. oz.
Alcohol.....	12 pints.
Water.....	6 pints.

Macerate two weeks, then filter.

4. Another:

Although fresh bay leaves are used in the West Indies in the preparation of the genuine bay rum, the dried leaves may probably be used with equal results. It would be worth while to make a trial, macerating the leaves (dry, but still as recent as possible) in rum, or to allow them to be present during the fermentation of the saccharine liquid from which rum is distilled, and then to distil the spirit over.

5. Another:

Oil of Bay.....	1 fl. drch.
" " Bergamot	2 fl. drch.
Jamaica Rum.....	16 fl. oz.
Deodorized Alcohol...	4 pints.
Water.....	8 pints.

Dissolve the oils in the alcohol, then add the rum, and lastly the water. Add to the mixture about 4 oz. of precipitated phosphate of calcium, shake well, and filter.

No. 1,520.—Addendum to Query on Mathematical Chemistry (Th. P., Louisville, Ky.).

We have the following note before us: "I notice in your answer to query No. 1,472 (Mathematical Chemistry) in April number, that you obtain 2942.4 as the result of the equation:

$$648 : 872 = 2187.5 : x$$

while my result is 2943.6.

Furthermore, why do you advise him to use the equivalent of absolute quinine, a substance not used in practice or obtainable, unless he subjects quinine to a heat of 257° F.? In case he desires the official article, he will only require 2523.46 grs. of sulphate according to the equation:

$$756 : 872 = 2187.5 : x \\ x = 2523.46."$$

Our correspondent is correct in his first statement. The result should have been 2943.6, instead of 2942.4, and we thank him for the correction.

Regarding the second point, we must say that we do not advise him to use the equivalent for pure quinine. The original query contained, among other problems which we asked to show how to solve, the following (see April number, page 76). How much sulphate of quinine will be required to furnish 5 av. oz. of pure quinine? We might have interpreted this to mean hydrated quinine (with 3 molecules of water), but we were equally justified to think that he wanted, for theory's sake, absolute quinine, and we reckoned the problem on this basis. If our correspondent understands now the method of calculation, he will be fully capable of calculating the corresponding value for hydrated quinine, in the same manner as the present correspondent has done.

No. 1,521.—Gold Paint (J. Bros., York, Neb.).

A formula is asked for a "gold-paint" such as painters use for gilding by means of bronze powder. If the powder is mixed with varnish, its lustre is deadened."

Not only does varnish deaden the lustre when it is mixed with the bronze powder, but the same thing happens when varnish is painted over it. The best material to use is oil of turpentine mixed with just enough boiled linseed oil to tint it yellow. The bronze powder is mixed with this liquid in a clean cup, and applied with a clean brush on the required place, which should have been previously painted and become dry.

The bronze paint commonly met with in fancy-goods stores consists of a bottle of bronze powder accompanied with a bottle of what seems to be benzine. The two are mixed a few moments before use, and the fluid portion evaporates almost immediately on its exposure to air.

No. 1,522.—Solution of Hypophosphite of Iron (L. T., Read's Landing, Minn.).

This correspondent says: "I have tried to make after the N. Y. and Brooklyn Formulary, the liquor ferri hypophosphitis, No. 65. I dissolved the sulphate of iron and ammonium in 8 fl. oz. of water and the hypophosphite of sodium, separately, in the same quantity of water. I then mixed them, and let them stand over night, and in the morning filtered. The residue was a slimy mass weighing about 20 grains. I washed this with 10 fl. oz. of water and expressed the balance remaining on the filter. On opening the latter I found—nothing. Can you tell me where the fault lies? Is there not too much water? Both the salts could be dissolved in a less quantity. I bought mine of a good reliable house and do not think they were impure."

We do not know what might have been the cause of the failure of the formula in our correspondent's hands. There may have been, perhaps accidentally, an excess of either salt, for the precipitated hypophosphite of iron would be redissolved in either case.

All true hypophosphites are soluble in water. The particular iron salt in question is, however, probably (at least in part) a basic salt, and it is this property which makes it so little soluble in water. We can hardly suppose that our correspondent used the green double salt, ammonio-ferrous sulphate, which is used as a developer by photographers.

While we cannot, for the present, point to the exact cause of the trouble, we can, on the other hand, suggest improvements of the working formula which we have ourselves adopted long ago. We will give the whole

formula with the modified directions:

Sulphate of Iron of Ammonium (U. S. Ph. '80)..... 924 grains
Hypophosphite of Sodium..... 608 "
Citrate of Potassium..... 600 "
Glycerin..... 1 fl. oz.
Water, enough to make... 6 fl. oz.

Dissolve the sulphate and the hypophosphite, each in 8 fl. oz. of the water and filter each solution. Then, under constant stirring, pour the hypophosphite into the iron solution, stir thoroughly for a few minutes until the mixture forms a homogenous white milk, and transfer it to a well-wetted piece of moderately dense muslin. Rinse the precipitating vessel with about 2 ounces of water, twice in succession, and pour the washing on the strainer. When all the liquid has passed through, gather up the strainer into a bag twisted at the neck, and gradually apply pressure with the hand until as much of the liquid has been expressed as possible. Now transfer the precipitate to a mortar, add the citrate of potassium, and triturate until a smooth paste results. Next add the glycerin, and gradually, while stirring, enough to make the product measure six (6) fluid ounces. Filter, if necessary, and keep the solution in small, well-corked vials, which should be completely filled. (Large quantities may be kept in stock-bottles, with a thin layer of olive oil poured on top.

Formulas asked for:

1. Woodward's Vegetable Liver Renovator. 2. Dupenco's Female Pills. 3. Graeffenberg Company's (Marshall's) Uterine Catholicon.

BIBLIOGRAPHY.

AMERICAN MEDICINAL PLANTS: An Illustrated and Descriptive Guide, etc. By MILLSPAUGH. New York and Philadelphia: Boericke & Tafel, 1885. Fascicle II. (parts 6 to 10) 4to. \$5.00.

The first portion of this work by Dr. Millsbaugh we have already noticed. This portion contains, like it, 30 plates and the accompanying text to describe the following plants: *Abies Canadensis*, *A. nigra*, *Actæa spicata*, *Apocynum cannabinum*, *Arum triphyllum*, *Caltha*, *Carya alba*, *Caulophyllum*, *Cephalanthus*, *Cypripedium pubescens*, *Dirca palustris*, *Equisetum*, *Fagopyrum*, *Gelsemium*, *Geranium maculatum*, *Geum rivale*, *Hepatica*, *Juglans cinerea*, *Mitchella*, *Oenothera*, *Podophyllum*, *Pulsatilla Nuttalliana*, *Ranunculus acris*, *Scrophularia*, *Senecio*, *Taraxacum*, *Thuja*, *Trillium pendulum*, *Viola tricolor*, *Zizia*.

The plates are printed in color, from drawings from nature, and embrace indigenous plants employed in homœopathic practice. The text gives the classification of each specimen; the synonyms; a description; the history and habitat; the part used and its preparation; the chemical constituents, and the physiological action of the drug. Each fasciculus is inclosed in a handsome paper-covered portfolio, having inside the cover an index to its contents.

This work is exceedingly attractive, and those pharmacists who desire to make use of botanical plates as window decorations, as well as those who wish a work relating to American medical botany, will find it very desirable.

OFFICIAL REGISTER OF PHYSICIANS AND MIDWIVES now in Practice to whom Certificates have been Issued by the STATE BOARD OF HEALTH OF ILLINOIS. 1877-1884. Chicago: W. T.

Keener, 1884, pp. 324, 8vo, muslin. \$1.50.

THIS is in every respect one of the most complete medical registers possessed by any State in the Union. It contains a variety of matters of interest to the profession, such as the laws and regulations governing the practice of medicine in the State, the decisions that have been rendered, list of revoked certificates, necrological record, directory of medical societies, and indexes of physicians, towns, and midwives, a country list of pharmacists, etc., etc. The book is altogether a very valuable publication, not only for physicians practising in Illinois,



PATIENT.—You blockhead! You have pulled a sound tooth!
DENTIST.—That's no matter. You should be glad that it is out before it makes you trouble.—*Fliegende Blätter*.

but as a correct list of many thousands of physicians whose addresses may be serviceable for advertisers.

MICRO-CHEMISTRY OF POISONS, including their Physiological, Pathological, and Legal Relations; with an Appendix on the Detection and Microscopic Discrimination of Blood: Adapted to the use of the Medical Jurist, Physician, and General Chemist. By THEODORE G. WORMLEY, M.D., Ph.D., LL.D., etc. With ninety-six illustrations upon steel. Second edition. Philadelphia: J. B. Lippincott & Co., 1885, pp. 784, Roy. 8vo, muslin, \$7.50.

Few persons in this country who have occasion to study the literature of toxicology are not familiar with the first edition of Prof. Wormley's work, and its value as a reliable authority is everywhere conceded. In the preface to this edition the author remarks that it has undergone thorough revision, and is much enlarged in matter, especially by the addition of illustrative cases, largely American, and by new tests and methods of recovery of poisons from organic mixtures; and also, by the addition of an entirely new chapter on gelsemium poisoning, and an appendix on the nature, detection, and microscopic discrimination of blood. Among other subjects added are poisoning by potassium chlorate, post-mortem diffusion of arsenic, arsenic in medicines, in fabrics, and in glass; Dragendorff's method for the recovery of vegetable principles; nature of ptomaines, and the preparation, properties, and recovery of jervine. The chemical nomenclature has also undergone revision.

THE MEDICAL DIRECTORY OF CHICAGO (including Cook Co.) for 1884-5.

Edited by ROBERT TILLEY, M.D. Chicago: W. T. Keener, 1884, pp. 179, small 8vo.

THIS contains copies of the medical laws in force relating to the practice of medicine, dentistry, and pharmacy; the national codes of ethics; information relative to National and State medical, dental, pharmaceutical, and hygienic associations; the charitable institutions in the State; colleges and medical periodicals; benevolent societies; and lists of physicians, dentists, and pharmacists in the city of Chicago and in the county, with the credentials, telephone number, and office hours of the former, and the addresses of all. It is compact, comprehensive and complete.

HAND-BOOK OF DISEASES OF THE SKIN. Edited by H. VON ZIEMSEN, M.D., etc. Illustrated with eighty wood engravings and color prints. New York: William Wood & Co., 1885, pp. 685, Roy. 8vo.

THIS work is presented by the publishers to all who subscribe for the original series of Ziemsen's Cyclopædia. It is a beautiful piece of wormanship, and creditable to all concerned in its production. Ten of the leading German authorities contribute the various chapters, which are often illustrated with plates in two colors.

ANLEITUNG ZUR HERSTELLUNG von Liqueuren, Aquaviten, Cognac, Rum, Arac and andern Getränken aus ätherischen Oelen und Essenzen. Von E. Sachsse & Co., Leipzig (1885).

THIS is a series of 300 practical formulæ (covering 76 pages) for preparing all kinds of liquors artificially. The firm prepares and sells a large number of stock-essences, for preparing the various kinds of liquors, and most formulæ direct the employment of these. The preface contains general instructions and practical directions regarding the ingredients and manipulation.

COCAINE HYDROCHLORIDE as the name of the salt formed by Cocaine with Hydrochloric Acid, and a discussion on the Nomenclature of Alkaloidal Salts in General. (Reprints from the *Weekly Drug News*, embracing letters from many eminent chemists), 12mo. New York: Druggist's Circular Press, 1885.

ITEMS.

Dr. Hugo Trommsdorff has retired from the well-known firm of manufacturing chemists at Erfurt, and the business will be continued, under the old firm-name "H. Trommsdorff," by Dr. Eugen Ostemayer, Clemens Lageman, and Dr. Oscar Brenken, with Leo Vosen in Aix-la-Chapelle as special partner.

The Index Medicus will hereafter be published by Mr. George S. Davis, of Detroit, Mich., and the first number of this year will contain the parts of January, February, March; the remaining parts will be issued monthly, as formerly. Drs. Billings and Fletcher will continue to edit it, and the price will be \$10.00 per year, unless it is sufficiently well patronized to warrant a reduction, in which case those who subscribe the full amount will have the difference credited as a subscription in advance for the following year.

American Druggist

Vol. XIV. No. 7.

NEW YORK, JULY, 1885.

Whole No. 133.

ARCHITECTURE AND DECORATION OF DRUG-STORES.

(Continued.)



THE subject of the present article is one of the beautiful stores designed by Mr. Hugo Kafka, of 234 Broadway, and located, as the illustrations indicate, on the corner of an avenue in one of the finest neighbor hoods of this city. The store has already been referred to in preceding numbers of this journal as an example of ingenious arrangement and beautiful decorative treatment, and we mention it again at greater length, on account of the skill displayed in the use of space which was available, as well as for the beauty of its structural details.

The store occupies the south-east corner of the block, having a frontage of 24 feet on the street, and 38 feet on the avenue, the entire frontage being of glass, excepting the space occupied by the iron columns which

verbal description, and it will be apparent that the work is of the most elaborate character. The floor of the store is made of colored tile, the counters are constructed of variegated and richly-colored marbles, and the woodwork of the prescription desk and wall-cases and shelving is oak. The ceiling is made of some material which admits of all the ornamentation being in low relief, and the effect is still further heightened by the use of colors in paint and bronze which harmonize well with the rich tints pervading other portions of the establishment.

The wall-cases are closed partly with sliding plate-glass doors, and partly with hinged doors provided with mirrors. This arrangement permits the proprietor to hide such goods as are likely to destroy the handsome appearance of the cases, and at the same time the apparent dimensions of the little store are very considerably increased.

A door to the eastward of the prescription desk admits one to a room which can be used for the night clerk, or as a store-room, as may be desired; and a door in this room opens to a stair-case going to the basement where large spaces beneath the building and the broad side-walk affords the accommodation for the reserve stock and laboratory.

The chief fault of the establishment is the limited size of the prescription desk, but this may in time be overcome in some degree, by having the prescription work done in the basement.

It may also be suggested that considerable space might have been obtained for displaying and storing fancy goods and sundries, if the front of the counter had been made with glass doors, instead of marble panels, opening into closets extending to one-third or one-half the depth of the counter.

A Death supposed to be due to Antipyrin.

A RECENT number of the *Lancet* contained the account of a case in which antipyrin was supposed to be the cause of death. The patient was a woman, who had a miscarriage six weeks previously, and was admitted to the hos-

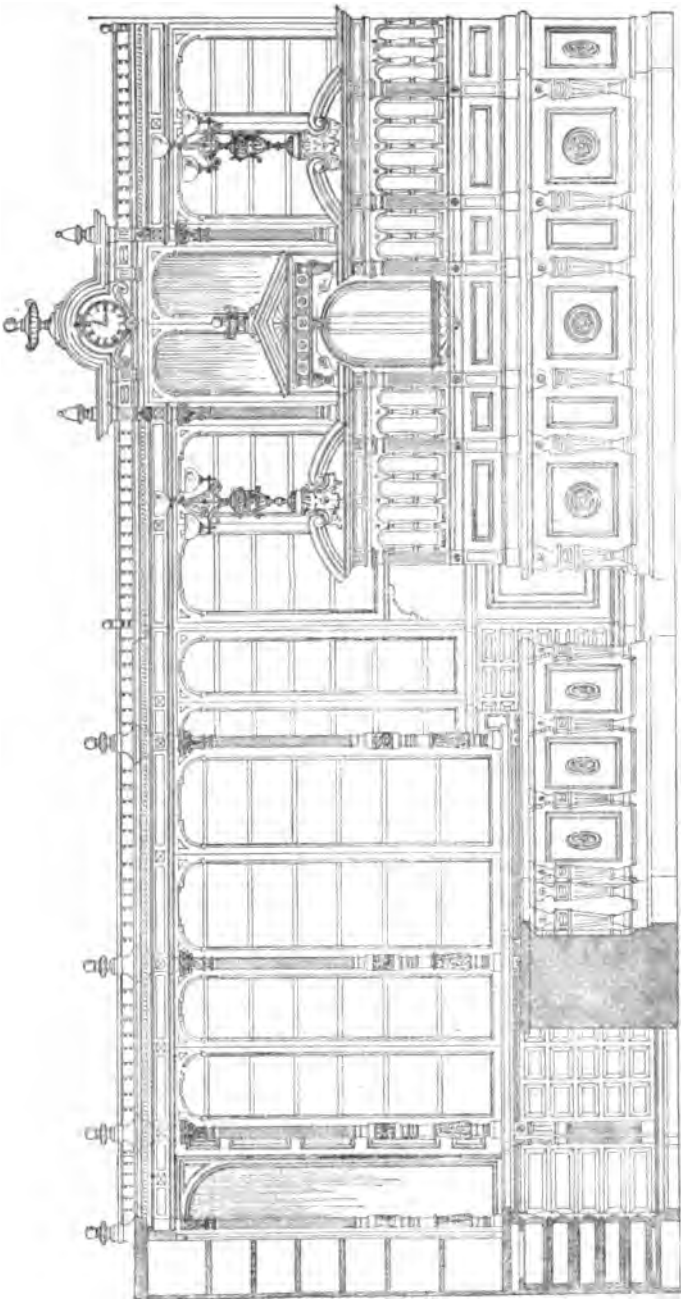


support the upper stories. Surrounding the large corner-column is an octagonal window, and the faces of the column are covered with glass mirrors. No show-cases are placed in the windows; but the window-ledges are so broad that they can be used, to some extent, for displaying a few articles of merchandise. The principal features of the window decoration are the elaborate gilt stands which inclose large colored-water vases, and support circles of smaller vases at their tops. One of these has been used by our artist as a basis for the initial letter at the commencement of this article and renders further description unnecessary. The plan of the store on the next page shows the arrangement of counters and shelving. The mineral water fountain, located near the corner window, is an elaborate structure of colored marbles and metal work, reaching nearly to the ceiling. Between the counter which surrounds the fountain and the easterly counter is a steam heat-radiator; and another smaller radiator, not indicated in the plan, is located between the entrance and the prescription counter, close to the window sill. The two views of the southerly and easterly walls show the design of the counters and shelves better than can be accomplished by

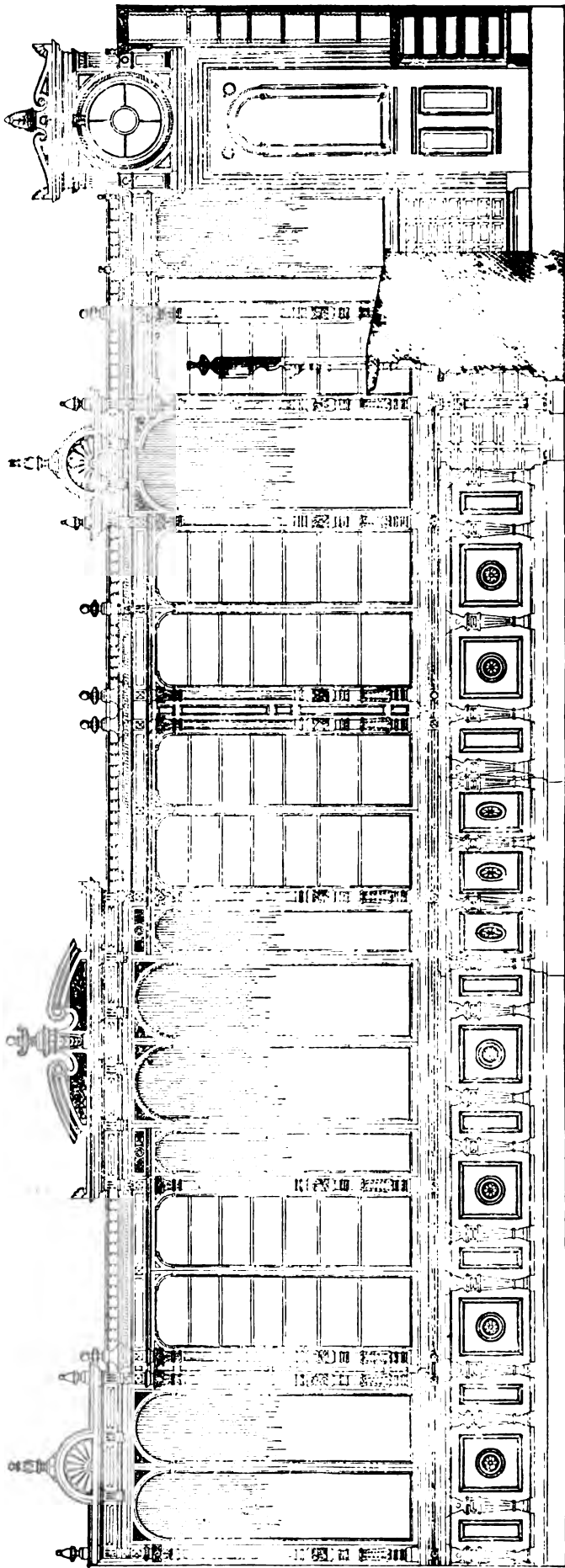
pital, supposed to be suffering with enteric fever, which was later on diagnosed as of a puerperal character. At first quinine was given, but without effect. Finally antipyrin was used, 35 grains being given at 3 P.M., which caused the temperature to fall from near 103° to 98.4° F. at 6 P.M., when a dose of half that quantity was administered, the pulse having receded from 132 to 108. The low temperature persisted for about twenty-seven hours, presenting almost a complete collapse, then rose for a short time to 100.6°, when death occurred, all efforts at stimulation having failed.

This being the first recorded case of a supposed death by antipyrin, it will be well to study the action of the drug more carefully. We must, however, say that the above-mentioned case is an exceptional one, the condition of the patient being such that otherwise harmless doses of well-studied and commonly prescribed antipyretics might have produced similar depressing effects.

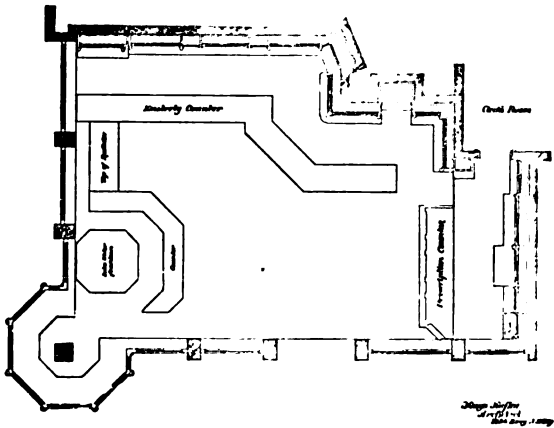
Over 200 ounces of antipyrin have so far been used in the public hospitals of the City of New York, without any accident or untoward symptoms, and with almost uniform good effect.



Southern End



Eastern Side.



Plan of Store.

Shops, New York
1885

SHOULD PROPRIETARY MEDICINES BE REQUIRED TO GIVE AN ACCOUNT OF CONTENTS?*

BY ALBERT B. PRESCOTT, OF ANN ARBOR.

THE public supply of medicines concerns the public health. In directing the use of medicines, the physician is legally responsible for due professional skill. In selecting and dispensing medicines, the pharmacist is held accountable for competence and care. Medicines, when wrongly applied, are liable to act as poisons or hurtful things, and are liable to fail in the dependence placed upon them in the care of health. For all articles of medicine furnished to the public, it is desirable that some one should be responsible. In the sale of medicines to consumers, it is in the interest of human life that the seller should guard the consumer against mistake in the application of the medicine.

There is now a very extensive supply of medicines to the public under conditions as follows: They are issued in sealed packages which go unopened from the manufacturer to the consumer without inspection of a pharmacist or responsibility of any member of community; no record of their composition is given upon the packages or furnished in any way to the consumer or to his pharmacist. These conditions of secrecy in the supply of medicines become a proper subject of concern in state sanitation. From articles put forth in this manner as medicines of unknown composition, the individual is at liberty to select remedies in the treatment of his own infirmities. Now it is the right, and, within certain limits, it is the duty of the individual to judge for himself in the care of his own health, so long as he does not infringe upon the rights of others. He is to select his own physician, from any school of medicine or, if he prefers, he may treat his own household and choose his own remedies, without the help of a physician, in any intent that is not criminal. Certain restrictions may be imposed by the State, in its discretion, for the general benefit of health, with exercise of parental authority. In some countries the State proceeds to act for the public in matters such as the supply of medicines, as a parent acts for a child. So in France, before a medicinal mixture may be put upon the market, the Academy of Medicine must act upon its merits, having subjected it to chemical analysis and therapeutic trial, but in the United States, for the most part, the individual is assumed to be an adult capable of judging for himself. He has the liberty to select his own remedies, none of which are forbidden by the State, and, therefore, in this country more than any other, *the individual is to be protected* in the exercise of his greater liberty in the selection of remedies; protected against the mistakes of the careless and against the deceptions of the dishonest. If the State so far respects the right of private choice that no medicine requires a legal sanction for sale, so much the more must the State place safeguard against fraudulent imposition upon private choice, and provide favorable opportunities for its more careful exercise. In this protection of the individual it has long been required that a "poison-label," with the name of the article liable to act as a poison, shall be placed upon every package of powerful medicine that is dispensed without a physician's prescription; and in this protection of the individual it is fit and right that the so-called proprietary medicines of the present time shall be required by law to bear upon each package a statement of its contents—their names and proportional quantities.

This information is demanded as the right of the purchaser and consumer of the medicine, and the demand violates no right of the proprietor and manufacturer of the medicine. It is impossible to see how the maker of a medicine can show cause why its composition should be withheld. If the maker has any right as an inventor, he can only secure such right by obtaining a patent. A patent for composition of matter requires that an explicit statement of such composition be put on record in the Patent Office, and published in the Patent Reports, and grants no privilege of secrecy. Very few proprietary medicines are patented, but it is eminently fitting that Congress should require that medicines which do hold rights patent for composition of matter, should bear upon the label of each package on sale the same formula of composition for which the patent is granted. To this effect legislation by Congress should be obtained. But other medicines must be dealt with, as is held by the best authorities, through legislation in the several States.

It may be urged that property already invested in the publication of certain medicinal mixtures would be depreciated, with great loss to the proprietors, by a law that would give to each purchaser an account of contents of these mixtures. On this point it may be asked whether property invested in the secrecy of composition of a medicine is not invested at the owner's risk of such secrecy being prohibited by law. The law has made no guarantee of secrecy. If it be thought inexpedient however, to disturb business relations among the people by a prohibition of secrecy without warning, then the State may provide a law that shall take effect some time subsequently to its enactment, or provide a modified prohibition of secrecy of medicines in use prior to a near given date. At all events, the pecuniary interests of the proprietors of secret medicines now in use must not be permitted to outweigh the rights of the consumers of medicines for all time to come. The justice of prohibition of secrecy of medicines is clear enough and the policy of such prohibition is quite in accord with the spirit of our institutions.

If a statement of composition of medicines is to be required, it may be asked, in what terms is such statement to be given, and for what classes of medicine is it to be required? A statement of composition of any article must contain the names of its constituents, and names must be words defined in dictionaries of sufficient authority. The pharmacopoeias of all nations and of all schools or professional organizations of medicine are the special dictionaries of names of articles used in medicine. The principal dispensaries are private authorities of good credit in definition of names of medicines. All these names are defined in published and well circulated books, and defined by statements of the composition of matter of the articles named, so far as such composition is generally known in the sciences giving definition to articles of medicine at present. The name of any secret or proprietary medicine, not defined in any of the dictionaries just mentioned, could not be used in the statement of composition to be required. But the name of any pharmacopoeial preparation, though a single name for a mixture of many articles, can be used as a complete statement of composition of the preparation. Pharmacopoeial English names or pharmacopoeial Latin names may be employed, and there is no objection to the use of such common names as are defined in the dictionaries of the English language. But the use of trade names and newly-coined commercial slang names has to be avoided, these

terms being often invented in the design to conceal composition. Furthermore, a statement of the composition of a medicinal mixture, to be sufficient for use, must include the proportional quantity of each constituent named. But the end might be well secured by a demand for the quantities of only the medicinally potent constituents, in case an arbitrarily fixed list of such medicinally potent articles be provided. No medicines for use in or upon the human body should be exempt from statement of composition to be made to the purchaser. Of course, a name of a mixture defined in a standard authority is a sufficient announcement of composition. The prescription of a physician, stating composition, need not be put upon the package, because it is already placed upon record by the pharmacist who serves the patient; and when a physician dispenses medicine he acts as the immediate agent of the patient in regard to the composition of the medicine. These, therefore, are no exceptions to the rule that the purchaser of every article of medicine is entitled to information of its constituents, a rule equally applicable to all medicines, and now seldom violated except in cases of "proprietary medicines," so-called. These are the articles which are proprietary in the sense that it is undertaken to hold property in a knowledge of their components, not in any special skill of their production. The just law of statement of composition to be made to the consumer makes no bar against the privilege of the manufacturer to reap reward for special skill or care, or even for invention of operative method. To furnish with a medicine a statement of what it contains is but bare justice to the consumer; to publish for a medicine an account of the apparatus of its preparation is to contribute in generosity something that may be a pecuniary benefit to a rival producer; to attach to a medicine the name of its producer is only to accept deserved responsibility and avoid the confusion of anonymous productions.

Granting, now, the justice of the proposed legislation, and the practicability of defining its boundaries, before we ask how such legislation can be secured, let us consider briefly what it promises to be worth to the interests of public health. How much would an open statement of the components of packeted medicines do toward a correction of the nostrum evil? Well, it would do something. And to do anything in absolute advance is worth the while and worth effort. It is not possible to do everything. Certainly a legal requirement of a printed record of contents will not bring about an entire reform in the indiscriminate medication of the public, under irrational claims of irresponsible authors. Should the desired law be obtained and fairly executed, doubtless when nostrums bearing formulae of unknown drugs would be found to sell as widely as heretofore the secret nostrums, persons will say the end will not be worth the means. Nevertheless, it would be worth the doing to check the gross deception now covering simple and useful remedies in the nostrum business, and worth an effort to educate the public to scrutinize the claims of specifics.

Should the rational friends of public health unite in this matter, and make a faithful effort for non-secrecy in the "patent medicine" business, who will be found in opposition? Not the public at large. The people of the United States are slow to adopt certain safeguards against incompetence and deception in the treatment of disease and the supply of remedies, such as the safeguards of legal qualifications of physicians and pharmacists, these being measures that have seemed to limit personal liberty, and have been

* Read at the annual meeting of the Michigan State Medical Society, Port Huron, Mich., June 10th, 1885.

suspected of giving benefit to a class. The legislation for open composition of medicines is more fortunately placed in regard to public confidence; it stands as an evident protection to private liberty of choice, and class interests will appear arrayed against it. Not from the pharmacists of the United States, as a body, will opposition arise; on the contrary, the representative pharmacists will support the open composition of medicines, and the commercial interests of pharmacy are restive under the burden of secret packeted goods giving profit only to their proprietors. It is only the makers and owners of "proprietary medicines" of secret composition who will be found in active opposition. This opposition will not be slow or faint, and there are unlimited financial interests to support it. This is a class interest in very deed, liable to prove victorious in more than one contest over this issue. Victories of this sort, however, are apt to prove very unfavorable to the perpetuity of the monopolies who obtain them. The efforts of good physicians and faithful sanitarians can hardly do better service than to bring the question of secret composition of medicines to a fair and square issue between the people on the one side and the patent medicine makers on the other side.

NOTES ON PRACTICAL PHARMACY.*

(Continued from page 89.)

HYGROSCOPIC POWDERS.

THERE are several substances which are not suitable for powder mixtures by reason of their hygroscopic quality, *e. g.*, Sesquichloride of Iron, Acetate of Potassium, Carbonate of Potassium, Citrate of Potassium, Iodide of Sodium, etc. If that part of the powder mixture which serves as excipient is of a kind which is able to absorb a good deal of moisture without losing its pulverulent form, as, for instance, Pulvis Althææ, Tragacanth, Salep, Calcined Magnesia, Carbonate of Magnesium, Alumina, white bole, and if such excipients are present in ample amount, the mixture may keep dry for several days if inclosed in glass vessels or in paraffin paper.

	Gm.	gr.
℞ Potassii Acetatis,		
Rhei pulv.	5.0	75
Magnesi Carbonatis	15.0	240
Sacchari albi.	10.0	150
M. f. pulvis. D. S. Take in teaspoonful doses.		

In a wide-mouth glass vessel, the opening of which will admit a teaspoon, but which must be kept closed

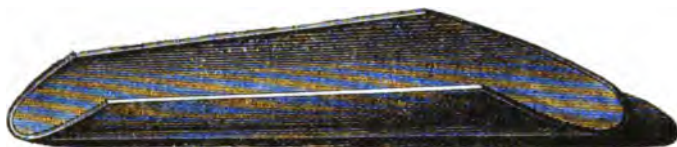
order the mixture may and can be effected. Such substances must never be rubbed together with easily deoxidized materials.

Readily deoxidized drugs are: picric acid, potassium chlorate, potassium iodate, potassium bichromate (red chromate of potassium), potassium permanganate, also potassium nitrate, potassium picrate, silver nitrate, oxide of silver, chlorinated lime. Such substances should first be powdered separately by friction in the mortar. They are then mixed with the constituent which is not oxidizable, and lastly, without friction, and by stirring with a wooden rod or by gentle agitation in a glass vessel, with the powder which is oxidizable or has an affinity for oxygen.

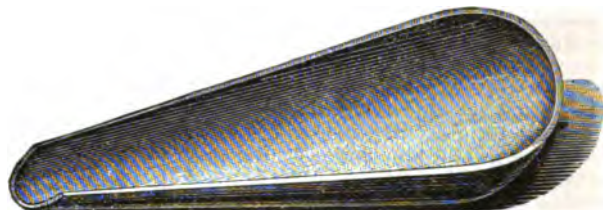
Readily oxidizable substances are: carbon, organic powders, iodine, sulphur, sulphur combinations, reduced iron, powdered iron, iodide of iron, hypophosphites, also camphor, many ethereal oils, ammoniacal salts.

	Gm.	gr.
℞ Potassii chloratis	2.0	30
Lactis Sulphuris	3.0	45
Antimonii Sulphurati,		
Zinci Valerianatis.	0.5	8
Sacchari.	5.0	75
M. f. pulv. Divide in partes 20 æquales.		

Here the chlorate of potassium must be separately rubbed to a fine powder,



Form of the large powder receptacle.



Form of the small powder receptacle (of horn).

A Waste of Pepsin.

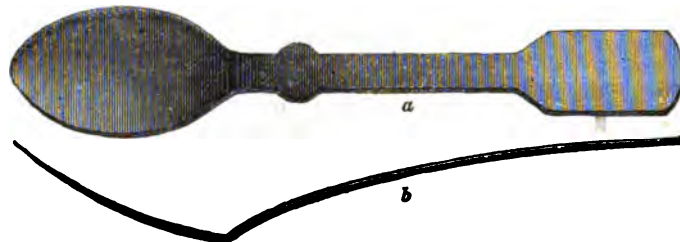
A CORRESPONDENT of the *Répertoire de Pharmacie* makes a curious calculation as to the results that would follow from the strict carrying out of the injunctions in the Codex relative to the testing of pepsin. It is estimated that every pharmacien will receive a supply of each kind, amylaceous and extractive, at least twice a year. This would involve four examinations, each requiring on the average, according to correspondent, three experiments; and as there are are eight thousands pharmaciens in France, this would amount to 96,000 experiments. The Codex stipulates that the test shall be made with 10 grammes of washed and freshly-dried pig's fibrin, and the correspondent estimates that the yield of this material from the blood of a fair-sized pig does not exceed 100 grammes. To obtain, therefore, the quantity of fibrin estimated to be required annually for the testing of these two kinds of pepsin in France, 960 kilogrammes—it would be necessary to slaughter 9,600 pigs, and the writer speculates as to what would become of the porcine race, were the estimation extended to pepsin wine and other allied preparations. —*Pharm. Journ.*

Quinine Pills.

AT a recent meeting of the New York German Apothecaries' Society, a discussion arose on the subject of the most suitable excipient for quinine pills. It was contended by several members that an addition of tartaric acid was undesirable, as it rendered the mass difficult to roll. The following formula was then declared to be the best:

Sulphate of Quinine.	1 oz.
Tragacanth, powd.	150 grs.
Glycerin.	80 "
Syrup.	160 "

—After *Deutsch-Amer. Apoth.-Zeit.*



a, Small powder spoon; b, its form in longitudinal section.

with a cork, the mixture may remain dry for one or two weeks.

If the absorbent excipient powder is present in small amount or is entirely absent, the physician should be informed of the hygroscopic quality of the powder mixture, or if this be impossible, the powder, unless it is divided, should be dispensed in an appropriate glass-vessel, with the notice that the powder will not lose its efficacy if it should become damp.

[Mr. Whitla, in the *Chem. and Drugg. Diary*, remarks: When the physician orders salts, like potassium iodide, or roots, like gentian, with directions for their solution or infusion by the patient himself, the dispenser should destroy their identity by the pestle before sending them out. Quinine, for the same reason, if ordered in a mixture without a solvent, should be carefully triturated until the crystals are broken up. In general, we agree with Mr. Whitla, though we do not think the rule could or should be always carried out.]

DETONATING OR EXPLOSIVE POWDER MIXTURES.

If substances which are rich in oxygen or are easily deoxidized are to form ingredients of a powder mixture, we must consider in what manner and

*The basis of this series of papers is the latest edition of Hager's "Technik der Pharmaceutischen Rezeptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

also the following four ingredients must be mixed separately, then the chlorate of potassium is to be stirred in and mingled with this mixture by means of a feather. Pressure with the pestle would produce a dangerous detonation.

	Gm.
℞ Potassii Permanganatis,	
Calci Carbonatis,	
Amyli.	100.0
M. f. pulv. D. S. For dressing wounds. —Dr. Demarquay.	

The permanganate of potassium is rubbed to powder separately, then mixed with the carbonate of calcium by trituration in the mortar. The starch, previously crushed, is placed in a salt-mouth vessel where it is united with the mixture of permanganate of potassium and carbonate of calcium by agitation.

	Gm.	gr.
℞ Potassii Chloratis.	10.0	150
Potassii Salicylatis.	5.0	75
Cinchonæ pulv.	30.0	460
Carbonis ligni.	50.0	770

M. f. pulv. D. S. For sprinkling wounds.

This is a *very dangerous* mixture. The last three ingredients are to be properly mixed, spread on a sheet of paper, and the chlorate of potassium, after having been separately rubbed to powder, stirred and mixed by means of a feather.

When delivering this mixture, humanity requires that attention be called to the fact that the mixture must be guarded against sparks or exposure to a naked flame, or pressure, as well as that the mixture should not be kept in a place liable to become hot, *e. g.*, near the stove or on the mantle. If dispensed in a box, even friction by the lid might cause an explosion. HENCE CAUTION SHOULD ALWAYS BE ENJOINED.

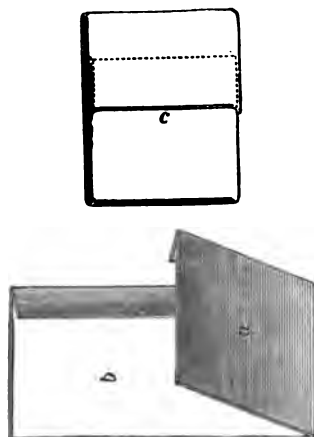
[It is not sufficient, in our opinion, that the pharmacist merely caution the patient in such a case. If he can communicate with the physician, to

draw his attention to the risk in having such a compound handled by inexperienced persons, he should under all circumstances do so, without, of course, criticising the prescription in the hearing of the customer or patient. If the latter is an intelligent person, he will readily understand that caution is necessary, and will scarcely fail to follow the directions. Sometimes, however, as, for instance when such a compound is to be delivered to a person going out of town, it may be advisable to dispense the mixture in two separate portions, properly labelled, one portion containing the danger-producing substance, and the other the remaining ingredients, both with directions how much of one should be mixed with the other, and how. And further, we think it incumbent upon every pharmacist to whom such prescriptions are brought to try and discourage the prescriber from ordering such compounds under any circumstances.

It would be well if there were a common understanding among physicians and pharmacists, that all powders intended for external use, or for the preparation of injections, lotions, embrocations, etc., should be dispensed in colored paper. A very good paper for this purpose is the highly-glazed, fine, hard-ware paper, which has a drab tint.]

DISPENSING AND DIVIDING POWDERS.

A powder is dispensed either in its



a, b, Paper capsule for powder; c, the same closed.

entire quantity, the patient taking it by the point of a knife, teaspoon, etc.; or else it is dispensed divided into several doses. The division of a powder is indicated by the physician on the prescription in the following words: *M. Divide (Dividatur) in partes æquales* ..., for instance *x*. (*Div. in p. æq.*), or else a multiple dosing is demanded by: *M. D. (Dentur, Dispensa, Dispensentur) tales doses Nr. ... (D. t. dos. Nr. ...)*. The dispenser must pay proper attention to the difference between these terminal formulas of a powder prescription. If it says: *Dentur or Dispensentur tales doses x.*, take of the prescribed drugs as many times (here, *ten* times) the weight as there are to be doses, and after being mixed, the powder is divided into the number of equal parts called for (in this case *ten*). If it says: *Dividatur in partes æquales x.*, the powder is mixed in the prescribed quantity and divided into the number of doses directed (in this case *ten*). The doses of the powders in the following two prescriptions are alike:

	Gm.	gr.
B Hydrargyri chloridi mitis	0.05	$\frac{1}{4}$
Sacchari albi	0.5	8
M. Dispensa tales doses quinque.		

	Gm.	gr.
B Hydrargyri chloridi mitis	0.25	4
Sacchari albi	2.5	40
M. Divide in partes æquales quinque.		

The doses are accurately weighed and emptied into so-called powder receptacles of horn bent in the form of

the keel of a ship, and which are placed in a row on a piece of clean wrapping or smooth writing paper. If some powder remains after division, this surplus is added to the doses in quantities estimated by the eye; but if there is a shortage, that is to say, if the last dose lacks the full weight, an equal quantity must be taken from each of the other doses to bring the last very nearly to the full weight. This mode of division is not to be commended, especially in the hands of the inexperienced. It can be avoided in most cases if the loss in the quantity of powder during mixture and division be estimated at 0.03 Gm. (3 centigrammes) for each dose, and this loss be taken into account in dividing the whole amount of the powder.

To make the division by the eye, that is, without scales and weight, is never permissible in accurate dispensing. [It may, however, be justified in the case of powders which are entirely innocuous in their nature, and which are intended for external or other coarser use, particularly when many are to be put up in a short time. Even here it will generally be possible to adopt some safeguard against gross errors. For instance, a pill-box or other convenient receptacle may be selected, which, when evenly filled with the powder, without pressure, may just



Sevcik's wafer capsuling apparatus; SM, top piece; U, base.

hold the required quantity. In the case of powders intended for internal use, or containing any important or active constituent, however, each one should be weighed by itself.]

A great convenience in the weighing of powders into smaller doses is a small powder spoon of proper shape. It is very shallow, at its anterior point slightly rounded, and as sharp as possible; its bowl must also form a large obtuse angle with the handle. These powder spoons are of horn or bone. [Many of the utensils used in Germany or other continental countries, and mentioned in these articles, are not at all or but rarely used in this country or in England, except by pharmacists educated abroad. And even these do not confine themselves to the manners and customs inculcated upon them during their apprenticeship, but often adopt more modern, though equally correct methods.]

From the powder receptacle the dose is poured into the powder capsule and inclosed therein.

The capsules are made from a white, clean, smooth (calendered), or paraffined paper, which latter is still termed *charta cerata*. Only for the bicarbonate of sodium of effervescent powder, capsules of blue or pink paper are used. Capsules are kept in stock of different sizes, intended to contain 0.5, 1, and 2 Gm. of powder. [Most of this refers to continental usage only.]

The packages from capsules of the same size should always have the same dimensions. In order to effect this, the folding in of the powders is done as follows: The capsule is grasped with the left hand, by pressure with the thumb and index finger of the right hand one-third (*a*) of the capsule is followed over (comp. the figure), the powder is poured into the part *b*, and the latter bent in such a way that the slit *c*, which is to receive the part *a*, exactly halves the surface of the closed capsule.

Blowing into paper capsules so as to open them for the reception of the powder is a habit as insufferable as it is repulsive, which cannot be too strongly condemned. It could be called a necessary evil, were there no other method which would answer the same purpose. With a small knife or a sharp extract spatula held in the right hand, the fold of the capsule is easily opened. While the powder is being poured in, there is nothing to prevent the fourth and fifth fingers from holding the spatula pressed against the palm of the hand so as to have it ready for opening the next capsule. This implement may be used at the same time for gently tapping the horn receptacle in order to detach the generally adhering remnants of the powder. Moreover, the dispenser will find enough leisure moments in which he can open a number of paper capsules so as to have them ready for use.



Ob.



G

Ob, a wafer seen from above; it is dished like a soup plate. G, vertical section of a closed wafer filled with powder.

After the powders are capsuled or folded in, they are spread on the piece of paper on which the horn receptacles were placed, covered with another piece of thick paper, and smoothed with a paper knife. In some cases, this procedure will be necessary with each single capsule, but the force with which the paper knife is used should not be so great as to compress the contents of the capsule into a firm layer.

Divided powders containing volatile substances, such as carbonate of ammonium, camphor, ethereal oils, and such as are hygroscopic, e. g., powders of sugars and dry narcotic extracts, are dispensed in capsules or boxes of paraffined paper.

Small powders of very bad taste are also at times dispensed in covered gelatin capsules, instead of papers. These gelatin capsules are packed in sliding boxes with an interposed layer of cotton or tissue paper.

POWDERS IN WAFERS.

Powders of bad taste and odor, or such as cause a deep stain, are inclosed in wafers and taken in this condition. There are various machines for the closing of wafers; Sevcik's apparatus is one of the simplest, handiest, and cheapest of these. It consists of only two parts: 1. The top (SM), or a double cylinder (of tin plate or silver). 3 Cm. ($1\frac{1}{4}$ inch.) long, 1.7 Cm. ($\frac{1}{4}$ inch) internal diameter, inclosing a movable wick (D) for moistening, and a closed end (E) opposite the wick, with which the firm closure of

the two wafers is completed; 2. A handsomely polished wooden base (*U*) having a depression (*O*) for holding the wafers. Top and base are strongly made and can be grasped firmly and handled rapidly.*

In order to fill the wafers, the powders are divided as above, placed on receptacles or pieces of cardboard, and then manipulated as follows:

1. The wafer (*Ob*) is placed upon the depression of the base; the wick of the top piece is pushed out, moistened with water, freed from excess of moisture by being pressed several times against a clean towel, and the wick thus prepared suffices for at least twelve powders without any repetition of the procedure. The wick is now retracted and the tubular top *SM* set up on the wafer.

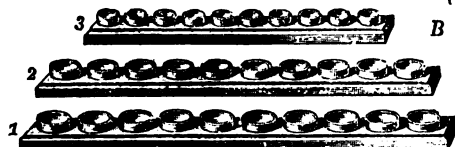
2. The apparatus, thus combined, is grasped at the top with the thumb and index finger, with the right hand the powder is poured upon the wafer through the tube of the top piece, the base is tapped lightly a few times, when the powder will spread evenly over the wafer.

3. The wick of the top piece is then protruded as far as the wafer, again retracted, and the top removed.

4. A second wafer is placed exactly upon the first, the top is set upon it with the solid end *E*, and pressed down by placing both thumbs upon the wick end of the top piece, thus closing the wafer.

* NB. Special care must be had that the wick is merely damp and not wet, otherwise the margin of the wafer will be surcharged with moisture, and after drying will assume a horny, uninviting appearance.

With some practice, powders can be inclosed in wafers by means of this ap-



paratus as rapidly as they can be put up in papers.

Limousin's wafer capsuling apparatus consists (1) of a press *A* with movable matrices *E* which permit of the employment of three sizes of wafers; (2) of three strips of wood with concave disks (*B*), whose size and form corresponds to those of the various wafers; (3) of three dampeners (*C*) composed of metal rings with interposed cotton tissue for moistening the margin of the wafers; (4) of a porcelain box containing a disk of felt moistened with water.

The powders are inclosed in wafers in the following way: The wafers are laid on the wooden disks (*B*) of corresponding size, the powders are put on each of the wafers so as to cover only the centre of the wafer. If necessary the powder is slightly compressed. The margin of the wafer which is to serve as the cover for that holding the powder is moistened with the dampener (*C*), previously wetted by being pressed upon the felt disk in the porcelain box. The moistening is done by turning the dampener on its axis. Now the wafer, whose margin has been dampened, is laid upon that covered with powder, both resting on the corresponding matrix are put under the press and united by appropriate lever pressure.

Wafers are manufactured in wafer bakeries from the finest wheat flour mixed with more or less wheat starch. The mould consists of two iron or brass plates compressed by clamps. Medicinal wafers have the size of a silver quarter and are dished like a plate. The flat wafer sheets, thin white wafer plates, are frequently used by the public

for the purpose of inclosing a dose of bad-tasting powders or electuaries. Seal wafers cannot be employed, as they are not rarely dyed with poisonous pigments.

Mr. Digne (Marseilles) has also constructed a rapid wafer capsuling apparatus, as well as a dose compressor, for the speedy dispensing of effervescing powders, the filling of wafers with powders, etc.

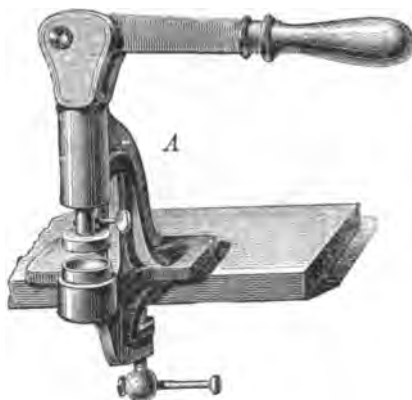
Powder compressors for changing powders into pastilles without any intermediate substance will be mentioned under the head of "Pastilles."

(To be continued.)

COMPARATIVE QUALITY OF BELLADONNA LEAVES.*

V. COBLENTZ, SPRINGFIELD, O.

THE preparation and preservation of the narcotic leaves of the Solanaceous plants, not only in view to their elegance and also to retain them in a presentable shape while yet their alkaloidal value may remain unimpaired, has ever been a troublesome feature to our profession. Of late years this has been, in a great measure, overcome through the introduction of the practice of pressing leaves and at same time throwing the cultivation, drying, and preparation of these for the market entirely into the hands of specialists. Increased consumption has demanded a like supply, hence careless cultivation, collection, and drying has ensued in many places, and thus throwing upon the market a leaf of inferior qualities. The large portion



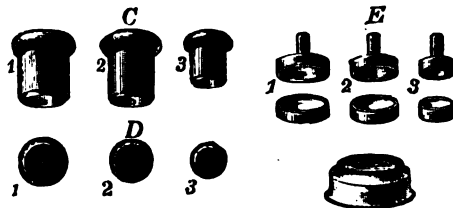
Limousin's wafer capsuling apparatus.

of our supplies is drawn from Germany, which represent a great variation in their comparative quality; this leaf is generally supplied in the dried loose condition, with a considerable lesser amount of stems and sticks than some of our own pressed leaves, which oftentimes consist mainly of these, with but a small proportion of the leaf. The English leaves we receive (some of which are packed in glass jars) present the appearance of an elegant and well selected leaf, upon which considerable care has been bestowed.

A number of our American pressed leaves are supplied to us without bearing the label of any one to guarantee their origin or quality, while the condition of the interior of some of these present such an appearance as would indicate to the ordinary observer that carelessness was the main feature in their selection and preparation; while, on the contrary, we find great care exhibited in the appearance of others, showing that quality was considered by them as of first importance. Let us for a moment glance at a few points to be regarded in their proper cultivation. The *Atropa Belladonna* is found growing wild in clearings of woods of Central and Southern Europe. In England it is cultivated largely in the chalky soil at Hitchin. In the wild state its range extends eastward to N. Asia Minor. The first year's growth (containing about one-half the quantity of atropine present in older

plants) plant is small, unworthy of collection, and containing but little alkaloid; from the second to the fourth year the quality is fairly uniform. Then the leaves should be gathered when fully developed and before they have commenced to wither and fall, at the time of the commencement of flowering. The plants before flowering are not rich in active principle, but at period of flowering the full development is reached and maintained. A chalky soil favors the increased formation of atropine, which may, in a measure, account for the superiority of the English leaf. The first crop is usually collected during June, and second in September. The English, immediately after collection, place them in a close drying closet containing a large number of sliding trays, the heat being furnished by pipes, through which steam passes, and a draught of cold air entering at base and the heated air escaping out of the top. In this manner they are speedily dried without access of light. The wild belladonna contains a larger quantity of alkaloid than the cultivated kind, though the difference is so slight as not to be of any material difference in the manufacture of pharmaceutical preparations, yet the cultivated variety should be employed for the sake of uniformity. Gerrard finds the leaf to be the part of the plant richest in alkaloid, the root, fruit, and stem next in order. An examination of parts of wild and cultivated plants, by Gerrard, showed 100 parts each gave as follows:

	WILD.	CULTIVATED.
Root.....	.450	.350
Stem.....	.110	.070
Leaf.....	.580	.400
Fruit.....	.320	.200



The leaves, without exception, have been found to yield the largest percentage of alkaloid, hence we might be led to conclude that pharmaceutical preparations of the leaf would be preferable to those from the root. This suggestion was not regarded by Redwood with any favor whatever, since the leaves are much more liable to undergo deterioration, hence a source of variability. As regards this possible variability, Gilie has stated thus, "Well dried at first, the leaves gradually reabsorbed humidity every time the bottle was opened as long as the hygrometric state of the external air exceeded that of the bottle. Under the influence of this moisture a reaction soon commenced, a mixed odor of mould and ammonia occupied the interior of the bottle, and then moist reddened litmus paper suspended in the air of the bottle is quickly changed to blue, and a rod moistened with HCl, held to the mouth of the bottle, gives off abundant white vapors of AmCl. This production of ammonia depending on nitrogenous principles in the leaves, of which atropine is one, this alkaloid should disappear in part or altogether, as it is known to change easily into ammonia and another odorous base, very soluble in water. For the rest, when belladonna leaves putrefy like other organic matter—and the instance above is a commencement of putrefaction—it is probable that the alterations which then occur do not respect the salts of atropia, and even if they did the changes which have supervened must injure the medicinal quality of the drug." Be that as it may, the comparative cleanliness and freedom from an overabundance of coloring matter peculiar

* The price is very moderate. The smaller apparatus costs 70 Austrian Kr. (about 36 cents); the larger, 80 Austrian Kr. (about 40 cents). The apparatus is for sale by Mr. Sevcik, pharmacist, Kleinsele, Prague.

* Read at the meeting of the Ohio State Pharm. Association.

to the leaf, and with the general satisfaction it has given among the medical profession, has permitted the root to supersede the leaf in most of the concentrated pharmaceutical preparations of the drug. Again appearance of the leaves cannot always be a criterion to be guided by. Some apothecaries take particular pride in the large size and elegant appearance of their narcotic leaves and pay a much higher price for them than for a small and shriveled leaf collected from wild plants in bloom, thus frequently sacrificing efficacy for sake of elegance. Considering the variability of the appearance and quality of our supply of the leaves, an examination of their alkaloidal value was then considered necessary in order to determine to an exact certainty their true value. The quantitative estimation of the alkaloids (atropine, etc.), in Bell. leaves is attended with considerable difficulties on account of the presence of a large amount of extractive matters, including chlorophyll, which interfere much and hinder the various operations with their presence, rendering the alkaloids difficult of extraction in pure enough form for weighing, this being one of the most important points in our estimation of this kind. I first attempted exhaustion with 86° alcohol, followed by addition of water to alcoholic extract, drove off the alcohol by gentle heat, filtered, washed with ether and precipitated the alkaloid by potassium-mercuric iodide. This did not answer, since the alcoholic solution was so loaded with chlorophyll and extractive matter as to impede filtration and thorough washing. After several trials, the process finally adopted was as follows:

One hundred grammes of dry and coarsely powdered leaves are exhausted by hot water, acidulated with 1.0 Gms. of tartaric acid to each 100 Gm. of leaves, the decoction is allowed to settle and the supernatant liquid is poured off on to a filter and upon the residue in the flask another portion of distilled water is poured and boiled, and the entire contents are gradually poured out upon the filter, and when drained, washed. The mixed decoctions are carefully evaporated to a soft extract, which is then treated with abs. alcohol, heated to about 50° C. to dissolve out the tartrate of atropia. The extract is thus treated three or four times until entirely exhausted, about 5 grammes of alcohol being required to every gramme of the extract. The tincture is diluted with a little water, and the alcohol driven off, leaving an extract of syrupy consistence containing the alkaloid as tartrate, which is then washed in a separator with one or two portions of ether to remove a little resin, and chlorophyll. Then by rendering the aqueous solution alkaline with ammonia, and agitating with several portions of chloroform, the atropine, etc., are obtained after evaporation of the mixed solution in an almost impure state. The residue was entirely soluble in dilute acids, and when its solution in chloroform was allowed to evaporate spontaneously, the alkaloid was left as a mass of minute white crystals. To ascertain the amount of pure alkaloid contained in the residue, I resorted to the recommendations of Messrs. Dunstan and Rawson's method of estimation, that of precipitation from its solution in water slightly acidulated with dilute hydrochloric acid by the alkaloidal reagent: solution of iodine in potassium iodide in excess, this completely precipitating every trace of atropine and hyoscyamine from the solutions as dark-green periodides. The ppt. is filtered off, slightly washed with a solution of iodide, and decomposed on the filter with a solution of sodium thiosulphate, when it dissolves entirely, forming a colorless

solution, from which the alkaloid is removed by several thorough agitations with chloroform, which are separated and mixed, and agitated with a small quantity of water (rendered faintly alkaline with ammonia), to remove adherent aqueous liquid. The chloroform is then evaporated over a water-bath until the weight of the atropine and hyoscyamine is constant. In this process we avoid the extraction of an excessive amount of color and non-alkaloidal constituents; the tartaric acid as employed would not produce any decomposition of the alkaloid; the heating of the alkaloid with alkalis is also avoided. Leaves from some cultivated plants were obtained that had been gathered just before flowering, near the first of June, and also a sample of some that had been gathered during the latter part of August, when the berries began to ripen. A—100 Gm. of dry leaves collected in May yielded .0413 Gm. residue; B—100 Gm. of dry leaves collected in May yielded .0409 Gm. residue; a—100 Gm. of dry leaves collected in August yielded 0.0453 Gm. of alkaloidal residue; b—100 Gm. of dry leaves collected in August yielded 0.0359 Gm. alkaloidal residue. The amount of pure alkaloid obtained from them severally are in their order—.0401, 0.0395, 0.0450, 0.0451.

The samples of leaves examined were such as are usually supplied to the trade, including those in pressed packages with the loose German and Allen's English. The samples of this last leaf average a larger per cent than any of the others. Several of the American pressed were musty, and consisted of a large per cent of stems, and yielded a very low amount of alkaloid, while some others of American pressed yielded a per cent of alkaloid that compared favorably in amount to the best. The German leaves varied considerably in their alkaloidal yield, probably depending on careless handling and storing as well as collection at wrong season. The results are summed up in the following table, giving the quantity of alkaloid (atropine and hyoscyamine) in 100 parts or grammes of the dry leaf as the alkaloidal residue, the pure alkaloid is also given as found in estimation as periodides.

No.	Alkal'd'l Residue	Pure Al'k'd.
1.....	.0179	.0171
2.....	.0095	.0090
3.....	.0205	.0182
4.....	.0439	.0433
5.....	.0405	.0398
6.....	.0050	.0020
7.....	.0117	.0109
8.....	.0092	.0090
GERMAN LEAVES.		
1.....	.0221	.0212
2.....	.0432	.0420
3.....	.0185	.0180
4.....	.0127	.0109
ENGLISH LEAVES.		
1.....	.0426	.0422
2.....	.0417	.0411

Thus on comparison we can see the variability of the quality of our supply of the leaves; there are several samples among these obtained in package form that yield a rather large proportion of alkaloid and leave nothing desirable in their quality, while again we observe a number of others that are quite fair, while 3 are quite worthless. It may be said concerning these latter ones that their packs did not bear the name of any firm as to indicate their origin. The German leaves were found to be quite variable, while the English leaves that were at hand were excellent.

Old but Good.—The remark of the man who, on visiting Asbury Park last month, said that in the middle of the day it was so quiet you could hear a gum-drop.

OINTMENT OF NITRATE OF MERCURY.*

BY H. CCOOK, P.H.G.

THE present official process for the preparation of this valuable ointment is a satisfactory one, and it is not our intention to offer a new formula for it; but simply to relate some of our experience in the preparation of this agent, knowing that we are treading well-trodden ground.

The leading points to be considered are, namely: First, the method of employing heat in preparing this ointment, and secondly, the practicability of using petrolatum, the popular ointment base, with nitrate of mercury.

It is well-known that the successful preparation of citrine ointment depends entirely upon the degree of heat employed; the proper strength of the acid, and a suitable oleaginous base containing a large per cent of olein.

With the above-mentioned facts in mind, a number of experiments were made, following the official directions as to the quantities of ingredients, but differing in the manipulations as to the employment of heat.

Seventy-six (76) parts of lard oil were placed in a capsule, and seven parts of nitric acid having a specific gravity of 1.42 were added without stirring, and the two heated to about 50 Centigrade for about fifteen minutes, then gradually elevating the temperature to 70° Centigrade, and maintaining this temperature until the slight effervescence ceased, and the mixture had acquired a rich orange color, indicating that the nitrous compounds had acted upon the olein in the oil, and the reaction had resulted in the production of elaidin, which is one of the valuable constituents of the ointment. When this mixture had become almost cold, the solution of nitrate of mercury was added, and then stirred with a wooden spatula till a homogeneous ointment, having a bright butter color was formed.

Lard oil contains much olein, which is, theoretically, a glyceride; that is a compound ether, or salt of the triatomic alcohol, glycerin, C₃H₅ OH₃, and the mono-basic oleic acid. Now this large per cent of olein (the liquid principle of the oil) when treated with the nitrous fumes is converted into a yellow butyraceous mass which must be rich in elaidin, by virtue of the large per cent of olein acted upon. The further reaction between the HNO₃ and the fatty matter is a complicated one, and possibly the oxidation of the oil at the expense of nitric acid by the liberation of nitrogen dioxide and nitrogen tetroxide is too violent and hurried when the oil is first heated to 70° Centigrade, as officially directed, and the resultant compounds less permanent than those formed at a lower temperature. An ointment made as above stated, was found to retain its bright color longer than one made by heating the oil first to 70° Centigrade after the official directions.

Secondly, the adaptability of petrolatum to nitrate of mercury.

Petrolatum, a new official, is becoming quite popular with pharmacists as an ointment base and justly so, for it is admirably suited for the purpose where the ointment is simply a mixture, but where chemical action is concerned, as in the case of nitrate of mercury solution, its practicability is very doubtful.

Now petrolatum, as is well known, is the purified residue left after the more volatile portions of crude petroleum have been distilled off, and then it is purified by heating and percolating through animal charcoal. Petro-

* Read at the meeting of the Ohio State Pharm. Association.

latum is composed of a mixture of soft hydrocarbons and impure paraffins, and undoubtedly some of the olefines. The latter might alter in composition and give rise to rancidity, but the paraffins are not capable of direct oxidation, and therefore render ointments made with petrolatum permanent when exposed to the ordinary atmospheric influences.

It has been shown that when hot nitric acid is brought into contact with a mixture of hydrocarbons, and members of the paraffin series, as it is with petrolatum, that octane, a higher member of the paraffin series is attacked, and other compounds are formed whose therapeutic value is, as yet, very doubtful.

With a view of determining the comparative value of petrolatum and lard oil in citrine ointment, a number of experiments were made in which petrolatum was used as the oleaginous base. The official directions were strictly followed, resulting in an ointment which, when freshly made, was a light-brown color, and being of a spongy and granular consistence. Several samples were prepared with petrolatum, all of which became very dark brown in color after standing several weeks.

Judging from the change of color, gradually deepening to a dark brown, and also from the peculiar consistence of the ointment made with petrolatum, it is probable that there are changes going on between the acid nitrate of mercury and the paraffins that cannot be productive of good from a therapeutic view, and certainly not from a pharmaceutical one.

Samples of nitrate of mercury ointment made with petrolatum were given a trial by one of our medical brothers, for the purpose of ascertaining the therapeutic value, and, after a fair trial, it was found to be, in his opinion, decidedly inferior in value to the official preparation.

Hence it is our opinion that petrolatum is altogether unsuited for use in the manufacture of citrine ointment, and the practice indulged in by some pharmacists, of using petrolatum in this ointment, is one that should be abandoned, as it is believed to be unsatisfactory and impracticable.

COLUMBUS, O., May 16th, 1885.

Quinine Alkaloids.

AN extraordinary piece of information is furnished by the text of an English patent* issued to P. Giacoso. While we have no faith in its allegations, we nevertheless quote them (after the *Chem. and Drugg.*)

The inventor has "discovered" that the alkaloids of Peruvian bark occur in plants of the genus *Artemisia*, from which they can be extracted either in the ordinary manner or according to the following method: The fresh or dried flowers and seeds, together with the whole plants (the best in *Artemisia Abrotanum* Linné), must be chopped fine and digested in diluted acid (sulphuric, hydrochloric acid, etc.). The extracts obtained by the diluted acid are neutralized and precipitated by a base. From the filtered moist basic mixture the alkaloids are obtained by heat with chist-oil, coal-oil, or petroleum having a low boiling-point, or by means of alcohol. In the latter case, the alcohol must be distilled off, the residue must be treated with dilute acid, and the alkaloid precipitated by means of carbonate of soda or another base. From the solution in the hydrocarbons the alkaloids can be transformed into salts by means of acids, and evaporated afterwards by means of carbonate of soda or another base.—*Journal of the Society of Chemical Industry.*

* P. Giacoso. Eng. Pat., 1472, January 15th, 1884.

EXAMINATIONS OF COMMERCIAL DRUGS.*

BY S. W. M'KEOWN, OF YOUNGSTOWN, OHIO.

BLACK SULPHIDE OF ANTIMONY.

MORE than ten years ago I remember reading in a medical journal that the black antimony of the stores was, in most instances, nothing but a mixture of chalk, sand, and soot. I at once examined a sample, and found that it effervesced briskly with acids after the manner of chalk, and that it contained also a black substance resembling soot or charcoal, most of which floated on the surface of the liquid. During the past year, however, I have examined a number of samples more carefully. The article which is sold to the trade at the remarkably low price of from four to six cents per pound is simply a mixture of marble dust and anthracite coal, in a proportion of from 18 to 33 per cent of coal to 82 to 67 per cent of marble dust. One sample that I analyzed a few months ago had the following composition:

Carbonate of Lime.....	44.14
Carbonate of Magnesia.....	35.07
Oxide of Iron and Alumina..	0.34
Insoluble Silicates.....	3.68
Carbonaceous Matter.....	15.92
Sulphide of Antimony.....	0.85

The presence of the sulphide of antimony may have been the result either of accident or design. Another sample contained marble dust two parts and coal (anthracite) one part, and not even a trace of antimony. An analysis of the marble dust used in preparing carbonic acid gas for the soda fountain proved it to have a similar composition to the marble used in the two samples mentioned, being magnesian marble or dolomite. These two specimens resembled so closely the genuine black antimony, that only a practical eye could detect the fraud. Their density, however, was little more than half that of the real article. In the absence of chemicals, the most convenient test for this drug is to agitate a small quantity in a glass vessel with water and decant, thus washing away most of the coal, leaving the marble nearly white and not at all resembling the genuine similarly treated.

When we consider the mountains of coal dust in the anthracite regions, and the vast deposits of limestone and marble, it does not seem probable that there will ever be a scarcity of black antimony. Three samples of genuine black antimony were examined. One was found to contain 27.28 per cent impurity, mostly silicious, another 23.84 per cent silicious matter, and a third marked antimony ore, 71.94 per cent quartz, etc.

Equal measures of the five specimens above described were weighed, and found to compare with water in density as follows:

Water.....	100
Genuine antimony.....	181
Genuine antimony.....	178
Antimony Ore.....	184
1st Marble Dust Mixt.....	110
2d Marble Dust Mixt.....	88

PRECIPITATED SULPHUR.

Two samples were found to have the following composition:

	1st.	2d.
Precipitated Sulphur.....	41.70	43.88
Precipitated Sulphate Calcium.....	58.30	56.12

The sulphur was dissolved out of a weighed quantity of the drug with carbon bisulphide, and the residue washed with ether and dried in a hot-water oven and weighed. The insoluble residue was identified as calcium sulphate by chemical tests, and as precipitated sulphate by means of the microscope.

* Abstracts from papers read at the meeting of the Ohio Pharm. Assoc.

Four other samples were ignited on a crucible lid. In each case a residue was left equal in bulk to the original substance. Of seven samples examined, only one was found to be pure.

CAPSICUM.

In about a dozen samples of adulterated capsicum, I found corn meal to be the adulterant in all except one. Pure capsicum contains no starch, and a portion boiled with a little water and treated with two or three drops of tincture of iodine, should produce no blue coloration. The ash should be white and amount to about 4.50 per cent. Exhausted with 94 per cent alcohol, it should yield about 28 per cent solid ext. A mixture of equal parts of capsicum and corn meal will, on the contrary, yield only about 14 or 15 per cent alcohol extract under the same treatment. By this method I have found the greater part of the adulterated capsicum to be about half corn meal. A few samples had only 25 per cent adulteration. The ash in most of the adulterated specimens is red or brown, and amounts sometimes to 7 or 8 per cent. The color is probably due to some red ochre put in to color the mixture. Turmeric is also used as a coloring agent, and can be detected by treating the suspected drug, first with alcohol, and then with ammonia. This treatment will not change the color of pure capsicum, but it produces a blood-red color with turmeric. The microscope furnishes the best means of determining the character of the adulterant.

POWDERED CAPSICUM.

	Adulterant.	Alc. Ext.	Ash.
Cayenne pods, pure,		24.95	4.50
New York, pure,		38.73	4.39
New York, pure,		27.85	4.55
New York, pure,		29.33	4.95
Philadelphia, corn meal,		20.52	7.73
Philadelphia, corn meal,		15.13	3.84
Cleveland, corn meal,		14.97	
Youngstown, doubtful,		13.68	7.72
Youngstown, corn meal,		12.87	5.37
Youngstown, corn meal,		12.32	4.37

[Samples 2, 4, 5, and 6 were obtained from wholesale dealers.]

BAKING POWDERS.

The best baking powders that I have found in the market are composed of cream of tartar and sodium bicarbonate with more or less flour or starch. The cheaper baking powders are made of common alum and sodium bicarbonate, with from 40 to 60 per cent of flour or starch, and sometimes bone phosphate is one of the ingredients. The Price Baking Powder, which I consider one of the best in the market, contains cream of tartar, sodium bicarbonate, and potato starch. The Cleveland Baking Powder contains flour instead of starch. The Royal Baking Powder contains some carbonate of ammonia in addition to the three ingredients already mentioned. If the cream of tartar and sodium bicarbonate were strictly pure, the correct proportions to mix them would be: Cream of tartar, 47 parts, and sodium bicarbonate, 21 parts. Inasmuch, however, as the cream of tartar used may contain from 3 to 6 per cent of calcium tartrate (and in some instances 15 per cent), it is found necessary in practice to use a larger proportion of cream of tartar than in the above formula. In a majority of cases, using reasonably pure materials, 49 parts of cream of tartar to 21 parts of sodium bicarbonate are found to work satisfactorily. Manufacturers, I believe, determine the proper proportions of each new lot of materials by assay.

Starch or flour is a necessary ingredient if the baking powder is to be kept any length of time before used. A manufacturer not long ago informed me that he once sent out a large quantity of baking powder, made of cream of tartar and soda only, and that nearly all of it was afterwards

returned to him as worthless, each individual package being as hard as a brick. So far as my observation goes, all the cheap baking powder contains alum. I believe it is conceded by the best authorities that alum is an objectionable ingredient in food, if not positively harmful. Still, it will probably continue to be used by cheap baking-powder makers until some ingenious person discovers a cheaper substitute. The alum used is always the ammonia alum. It is to the cheap baking powder what cream of tartar is to the higher grades of powder. Alum decomposes sodium bicarbonate, and the resulting carbonate in its turn displaces the ammonia of the alum. A mixture of the two drugs in proper proportions, subjected to heat and moisture, react upon each other, and both the carbonic acid and ammonia are driven off, and sulphate of aluminium and sodium are left in the place of the sodium bicarbonate and alum. Five cents' worth of alum and baking soda will furnish more available gas than the same money's worth of any other drugs. I would recommend the following as a good formula for a baking powder:

Cream of Tartar. 7 parts.
Sodium Bicarbonate..... 3 "
Starch 2 "

The material should be carefully dried and thoroughly mixed by sifting. I frequently see recommended a mixture of tartaric acid and sodium bicarbonate for a baking powder, but I have never found it prepared, and do not know anything of its merits.

Helianthin as an Indicator.

ACCORDING to H. le Chatelier, helianthin promises to become a valuable indicator in many analytical operations. [Helianthin is the ammonium salt of dimethylaniline - azobenzol sulphonic acid, known in commerce as "gold orange," "tropæolin D," "orange III."]

The author points out that this reagent is not affected at all by hydrosulphuric acid, monosodium phosphate (NaH_2PO_4) and other substances capable of precipitating certain metals, which may be in combination with strong acids; and that the latter may then be determined volumetrically, which will in most cases also suffice for estimating the amount of base. For instance, zinc acetate may be decomposed by hydrosulphuric acid, and the liberated acetic acid determined by titration with standard alkali in presence of helianthin as indicator. The amount of acetic acid will at the same time furnish the quantity of zinc by a simple calculation. Aluminum salts may be similarly determined by precipitation with monosodium-phosphate.—*Comptes Rend.*, 100, 737.

Cod-Liver Oil as a Nutrient, Externally Applied.

ASSUMING that a granulating surface, if sufficiently large, might be made use of with benefit as a medium for the administration of nutritive material, and that certain such materials could be applied to it which would not interfere with the processes of cicatrization, Dr. Hopkins (*Ther. Gaz.*, May, p. 303), in the treatment of an extensive ulcer, determined to employ for this purpose an emulsion of cod-liver oil, to which was added five grains each of pepsin and pancreatin to the ounce. The ulcer was accordingly dressed once a day with lint soaked in the preparation. A very decided change was soon observed; the appetite began rapidly to improve, and in fourteen days the area of the ulcer was reduced from one hundred and five to seventy-seven square inches.—*Pharm. Jour.*

EXAMINATION OF CYPRIPEDIUM.*

BY VOLNEY C. DAGGETT, PH.G.

AFTER a preliminary account of the botany, history, and other known facts relating to the officinal rhizome of *Cypripedium pubescens*, the author gives a detailed description of his method of analysis and of the results he obtained, from which we take the following:

Henry L. Air made an examination of *cypripedium* in 1866 (*Amer. Journ. Pharm.*, 1866, p. 494) and reported it to contain volatile oil, tannic and gallic acids, two resins, gum, glucose, starch, and ligneous matter.

Mr. Daggett first distilled a portion of the drug with water, returning the distillate upon fresh portions of the drug until three distillates had been obtained. The last distillate was milky and aromatic, with minute globules of oil floating on the surface. The quantity of the latter was, however, too small to be removed and examined.

In reducing 200 grammes of the drug to a number-80 powder, 175 Gm. of such powder were obtained, and the loss, therefore, amounted to 12½ per cent. On drying a portion of the powder at 212° F., it lost 11.3 per cent of moisture.

The drug was now subjected to the action of various solvents, and a known weight of the drug operated upon.

1. Exhaustion with petroleum ether. This was continued until a drop of the percolate, when evaporated on glass, ceased to leave a residue. The petroleum ether used was very volatile, had a specific gravity of 0.6565 at 58° F., and boiled at 110° F.

2. Exhaustion with ether. The residue from last operation was dried and then extracted with ether. Subsequently the residue was treated with

3. Alcohol (strong) in the same manner. Finally it was macerated in

4. Cold water, and filtered. The remainder left after this treatment was kneaded with cold water, allowed to stand until the coarse particles settled, and the supernatant liquid was then allowed to settle completely.

I. The petroleum ether extract was of a pale straw-color and neutral. Evaporated at a low temperature, it left a dark, reddish-brown, syrupy residue (a), having a peculiar, somewhat aromatic odor. Weight of residue 1.66 Gm.

On washing this (a) with water, it separated into two layers, one light, the other dark-colored. The whole was then poured on a wetted filter, when it yielded a transparent, neutral filtrate (g) of a slight odor and a slight disagreeable taste.

The residue (b) upon the filter was of a pasty consistence and brownish color. On washing it with strong alcohol, it nearly all dissolved, yielding a reddish-brown, opaque filtrate, with a few oily-looking globules at the bottom, which had probably been carried through the filter mechanically.

The remaining residue (c) was then washed with 80 per cent alcohol, but this removed nothing of any account. The same happened when 50 per cent alcohol was used.

The final residue (d) was then again dissolved in petroleum ether, which on evaporation left an oily, aromatic liquid, causing a permanent stain on paper, and losing its aroma by heat.

It apparently consisted of a fixed oil, with traces of volatile oil.

The alcoholic washings were concentrated and mixed with water, which caused a milkiness. After standing over night, a brownish-looking substance was found floating on the surface. The whole was then distilled from a paraffin bath, the temperature rising to 275° F., and the heat continued until the residue was reduced to a small bulk. It consisted

of two portions, the lower being white and milky (e), the upper being composed of numerous dark-brown globules of a greasy odor. The mixture was washed with ether, and this, on evaporation, left behind a dark-red, transparent oil (f), not aromatic and distinctly acid. When saponified, it yielded a salmon-colored lead soap, perfectly soluble in ether, partly so in benzin, and insoluble in carbon bisulphide and chloroform, showing the oil to have been a glyceryl oleate.

The milky understratum (e) from which the oil was removed contained nothing of interest.

The fixed oil (f) separated was perfectly soluble in alcohol to a clear solution; also in benzin and chloroform. With petroleum ether and carbon bisulphide it formed a milky, apparently only partial solution.

The aqueous washings (g) of the petroleum ether extract were treated with various alkaloidal reagents, but in no case was a precipitate obtained even after standing. Nor was any such precipitate obtained in the original solution. On being evaporated, the water washings yielded no residue.

II. The ether extract was dark wine-colored, transparent, and acid. On evaporation, it left a firm resinous extract amounting to 3.05 Gm.

This extract was first washed with water (h), which gave a pale-yellow liquid of persistent disagreeable taste, and slight aromatic odor, which yielded a reddish-brown precipitate with phosphomolybdic acid and a reddish precipitate with picric acid, but none with other alkaloidal reagents. On distilling a portion of the aqueous washings, and evaporating the distillate, a minute white residue was left, destitute of crystalline structure. It was too small to be studied further.

The aqueous washings (h), when treated with ferric chloride, gave a bright-green color, disappearing on heating. Gelatin and tartar emetic yielded no precipitate. The remainder of the washings was agitated with acetic ether and the solution (which was strongly acid) evaporated. It left a sticky, transparent, reddish residue, showing a slight crystalline formation after standing some weeks. It turned ferric chloride bright green. Repeated extraction of the residue of the washings with sulph. ether yielded the same result. Chloride of calcium, gelatin and tartar emetic failed to produce a precipitate. Hence tannin is absent and gallic acid is present.

The residue of the ether extract, thus washed with water, was then treated with 95% alcohol, then with 80% and with 50% alcohol (i). The residue left on the filter was then dissolved in ether, and this left a slight brown resinous residue on evaporation.

The alcoholic washings (h) were dark-red, acid, and had a peculiar, disagreeable taste. Treated with animal charcoal, filtered, and evaporated spontaneously, they yielded a residue of brown amorphous resin and numerous white crystalline plates (j). The resinous portion was then redissolved in alcohol. It yielded a dark-red resin, of bitter, disagreeable taste, freely soluble in alcohol, ether, and chloroform, less soluble in petroleum ether or benzin.

The crystals (j) mentioned above turned out to be sodium chloride.

III. The alcoholic extract of the drug was deep red, acid, and of indifferent odor. It contained 31.225 Gm. of residue.

The alcohol was got rid of by adding the residue to hot water and washing with water (k). The residue was finally again dissolved in alcohol (l).

These aqueous washings (k) were amber-colored, acid, and had a strong taste. After acidifying with sulphuric acid and treating with reagents (enumerated by the author, but omitted

* Abstract of a thesis presented to the Massachusetts College of Pharmacy, 1886.

THE
American Druggist
 AN ILLUSTRATED MONTHLY JOURNAL
 OF
 Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 7. WHOLE No. 133

FRED'K A. CASTLE, M.D., - EDITOR.
 CHAS. RICE, Ph.D., ASSOCIATE EDITOR.

PUBLISHED BY
 WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

JULY, 1885.

SUBSCRIPTION PRICE per year, \$1.00
 SINGLE COPIES, 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & CO., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

SOME of the New York daily papers are urging their readers to abstain from making purchases on Saturday afternoons, in order that storekeepers may close their establishments and give their employees a half-holiday. The long hours exacted of drug-clerks have been mentioned several times in the course of this movement, but whether they will eventually derive any benefit from it is to be doubted. The fact is that many of the classes of employees who are securing a half-holiday are those whose day's work always ends at 6 P.M., while the drug-clerk has often to remain on duty four or five hours longer.

Numerous attempts have been made to bring about an early-closing movement in the retail drug-trade, but so long as the nature of the business remains as it is, the hours of labor will continue as now. So many of the articles sold in drug-stores are likely to be required in emergencies and are so rarely kept, in any supply, in the house, that so long as the druggist's customers are up and about, so long will they resort to his establishment to supply their wants. Indeed, their demands do not cease by any means when they have gone to bed, for a nocturnal attack of illness is often an oc-

casional for an unseasonable call on the tired apothecary. Then, too, competition is becoming too great to permit one to risk losing customers who might be drawn off to rival establishments if they were to find the store, at which they have been dealing, closed earlier than usual. The same stress of competition obliges proprietors to carry on their business with the smallest expense for clerk-hire, and there is, therefore, little chance for recreation where there is no one to do the work when the only clerk is away. Indeed, there are not a few establishments where the proprietor has no assistant besides the errand-boy, or where a single clerk has the entire care of a branch store.

The wages of drug-clerks have been reduced to meet the decrease in profits, until men who can influence a little ready money, or induce a jobbing-house to give them credit, often feel that they can do better as proprietors and open a new store. If they should make little or nothing from the business for a time, it will be but a trifle less than they earn as clerks.

After the new store has been opened and it is discovered that the paying prescription business is apt to be taken to the older establishment, the new-fledged proprietor is then apt to realize that his professional character is something that may grow in time; but that the patrons in his neighborhood, whose confidence and business he has in view, depend on him, as yet, for their "patents," bird-seed, cigars, licorice, etc., but take their prescriptions to some one else. Just here comes the temptation to become a "cutter" and draw business by low prices. In other words, it is a question of *paying expenses*, and it is of no more use to preach Campion-plan or any other co-operative scheme to such a man than it is to stem the rising tide with a broom. His money or some other person's money is in the business; the expenses *must* be met and the note *must* be paid. Talk short hours of labor for such a man and you waste your breath. He works early and late, and his clerk, if he has one, must be on hand late and early. If profits are small, the sales must be multiplied. That man writes no papers on professional topics and attends no pharmaceutical meetings. The only professional journal he takes is the one sent him as a sample copy, and he does not often take time to read even that. He not only takes no pains to educate his clerk, but he is rather inclined to discourage study during business hours—there are too many things else which need his attention, and then, too, a drug-clerk may grow in time into a business rival, and do as his employer did—start an independent store, and "trust to luck" for business.

Unfortunately, the number of pharmacists who are such slaves to their business, though small in any community, are sufficiently numerous to interfere with the success of any plan for co-operation, whether it be in the matter of prices or shortening the hours of work.

In the latter respect, more is to be expected from public sentiment than from trade co-operation, and we hope that such pharmacists as can write, will send communications to the journals read by the public, and keep the latter in mind of the needed reform. It will be useless to publish such letters in pharmaceutical papers, for the non-professional reader rarely or never sees them; and any amelioration, as we have before intimated, must come from the sympathies of the customer and not from the vendor.

It is with much pleasure that we are able to announce the enactment of pharmacy laws in Massachusetts and Michigan. The most strenuous efforts were made to prevent the act becoming a law in the former State, and there was some fear that it would

share the fate of its predecessor of 1884, but the justness of the demand, and the support of the retail pharmacists and public, at length carried the day. The groundless statement made by opponents last year, that the law was intended for the benefit of the College of Pharmacy, was avoided even more scrupulously this year by suppressing any effort which might by any possibility be construed in such manner.

The Numerous Uses for Salt.

WE extract the following seasonable remarks from an editorial in the *New York Medical Journal*:

"The unquestioned benefit derived from salt-water baths in many chronic affections is undoubtedly due in part to the circumstances attending their use. The summer trip to the seaside in August, which appears to be almost a fashionable necessity, in very many cases yields a grateful interest on the investment, in the way of renewed health and vigor, except when indulgence in the varied dissipation of the prominent seaside resorts counterbalances the good that would otherwise accrue. The fresh air, the out-door life, the very exercise of bathing, contribute, in a measure, to the end attained; but the salt itself exercises an influence that is not to be overlooked, as it stimulates the skin, quickens the circulation, and often appears to promote the activity of the organic functions. When we consider that the water of the sea contains only about two per cent of chloride of sodium, with a varying but extremely minute proportion of other ingredients, we see how easy a matter it is to imitate it at home when the summer vacation is over, and thus to prolong the benefit and comfort that have been derived from salt-water bathing. A cupful of salt to the basinful of water is all that is requisite for a sponge-bath; while those who possess the luxury of a metropolitan bath-tub will find that a peck of salt to the tubful of water will yield a more prolonged enjoyment and corresponding benefit. No one, we suppose, but a believer in infinitesimals would pretend that the minute quantities of the other chlorides, or of the sulphates and carbonates found in sea-water, exerted any appreciable effect on the economy, and the influence, such as it is, may be fairly attributed to the chloride of sodium alone.

"The antiseptic properties of salt suggest a number of useful applications. In surgery and midwifery carbolic acid and corrosive sublimate have rendered great services, but at the same time their employment is not wholly without danger, although comparatively weak solutions are made use of. Salt, even in very strong solution, would be harmless, and might possibly replace the more active antiseptics in many cases. As a cleansing application to foul ulcers and wounds salt solutions have been used from the earliest times. In cases of indolent action, with large, pale, and flabby granulations, the astringent effect of the salt would doubtless prove of service, as well as in many cases of excessive mucous secretion.

"There is yet another application of salt, and one that certainly merits more extensive investigation. We refer to the disinfection of night-soil and other sewage. In cities, a few handfuls of salt thrown daily into the water-closets, and an occasional handful thrown into the wash-basins, would go far, we believe, toward counteracting the noxious effects of the omnipresent sewer-gas, against which sanitary efforts have so long been directed. In the country, a quart or more of salt used daily in the privy vaults would serve an equally useful purpose."

(Continued from page 129.)

here), the presence of *tannin* was established.

To remove this, acetate of lead was carefully added to the remainder of the washings, until it ceased to produce a precipitate. The filtrate was brownish, bitter, and acid. On treatment with potash, an abundant white precipitate was produced, which was filtered off and washed with alcohol. The alcoholic washings left a residue of a light straw color, and slightly bitter.

The filtrate from the potash precipitate still retained its bitterness. On evaporation it lost its color, had a very bitter taste, and the consistence of glucose. Previous to concentration, a portion of the liquid was distilled, and a trace of a *volatile acid* obtained, which was not further investigated. The thick residue obtained yielded nothing to ether, petroleum ether, or chloroform. It was partly soluble in alcohol. On being dissolved in water, and treated with picric acid and potash at a boiling temperature, the solution turned blood red. A pink color was produced by warming with basic acetate of lead and potash—both of which reactions show that glucose was present in the liquid after the heating or warming. Fehling's solution, however, failed to be reduced, until after boiling the liquid with dilute sulphuric acid, when it became rapidly reduced. Heated on platinum foil, it darkened, charred, emitted the odor of burnt sugar, and finally was consumed without residue.

The author, therefore, concludes that a glucoside is present, but leaves this point to be decided by a further examination to be made by him.

A precipitate was produced by adding potash to a portion of the aqueous washings; this was shown to be magnesium, and no other bases were present.

The alcoholic solution (b) of the residue, left by the alcoholic extract above mentioned, was treated with animal charcoal, and afterwards with 30%, 50%, and 70% alcohol, respectively.

These solvents yielded *resins*, deepening in color with the concentration of the alcohol, of bitter taste, and while differing from each other in some respects, yet probably closely allied. They were not further examined.

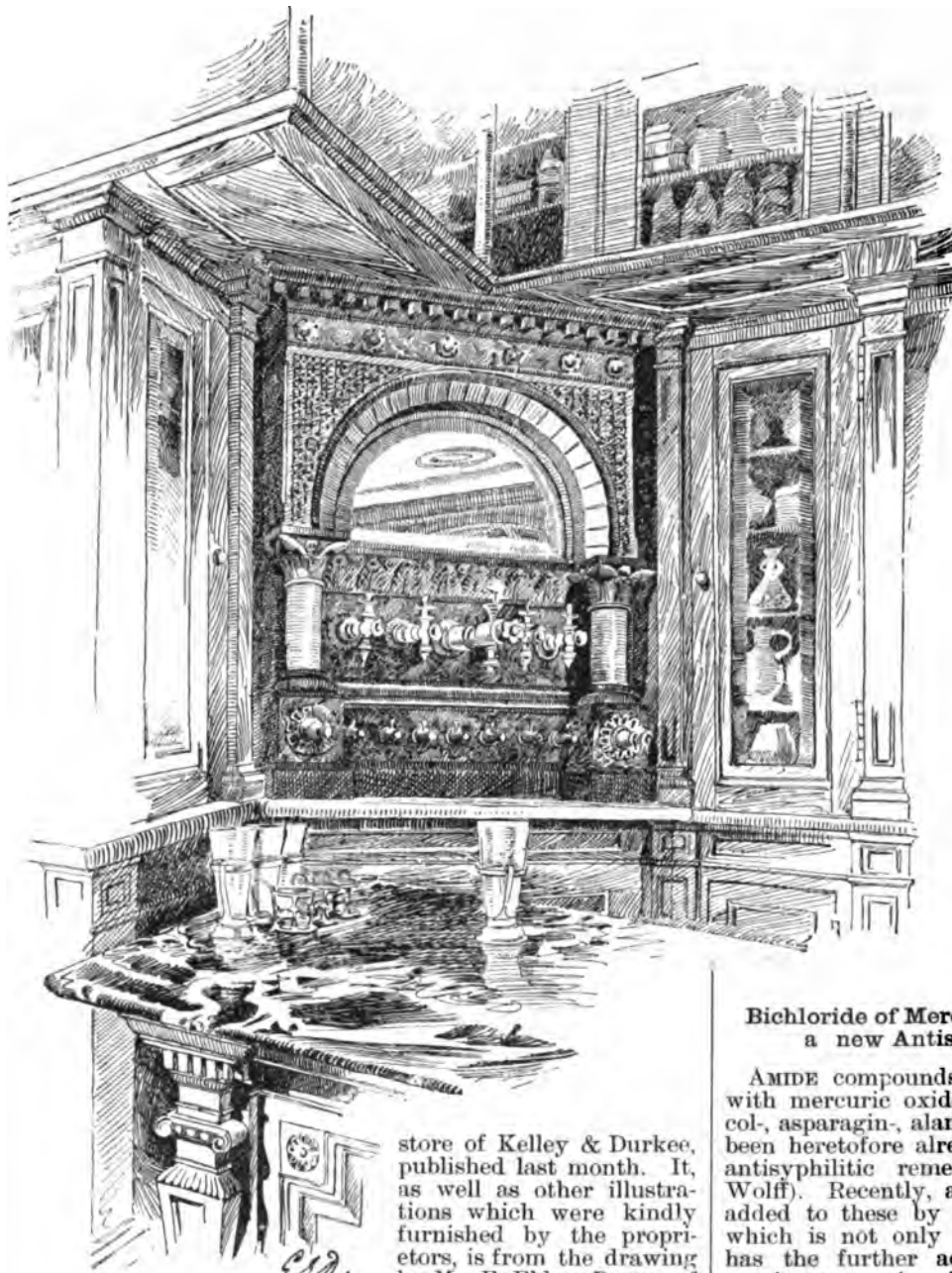
IV. The watery extract of the drug was found to contain gum, sugar, and starch. The ash contained in the drug amounted to 11%.

The constituents established by the author to be present in the rhizome of *Cypripedium pubescens* are, therefore, the following:

Traces of Volatile Oil,
Fixed Oil,
Two Resins,
Volatile Acid,
Tannin,
Gallic Acid,
Gum,
Sugar,
Starch,
Sodium Chloride,
Magnesium Salts,
Ligneous Matter,
A Bitter Principle (probably a glucoside).

AN ELABORATE MINERAL WATER APPARATUS.

WE publish herewith the illustration of the Mineral Water Apparatus referred to in our description of the



store of Kelley & Durkee, published last month. It, as well as other illustrations which were kindly furnished by the proprietors, is from the drawing by Mr. E. Eldon Deane, of Boston, and shows very well the peculiar features of the apparatus, as described. The black-and-white marble used throughout the store for counters is also well indicated, and likewise the relations of the apparatus to the gallery and wall-cases.

Detection of Oil of Turpentine in Oil of Lemon.

WHILE it is an easy matter to tell good fresh oil of lemon from such as has become therebithinate in taste, and no one is likely to examine the oil chemically merely for the purpose of ascertaining whether it has a fine flavor and is suitable for delicate uses, yet a reliable test for the presence of oil of turpentine, which is indeed often added to inferior sorts, is quite desirable.

Such a test has lately been proposed by G. Heppes (*Chem. Tech. Central Anz.*, III., 371), the reagent being butyrate of copper.

A portion of the oil is gradually heated on a sand-bath in a perfectly dry test-tube, with a small quantity (about as large as the head of a pin) of butyrate of copper, to a temperature of about 172° C. (341.6° F.), taking care that it do not exceed 180° C. (356° F.). If the oil of lemons was pure, the copper salt dissolves and colors the oil green. If oil of turpentine, however, was present, the oil becomes turbid at the above temperature, turns yellow, and deposits reddish-yellow cuprous oxide. The difference between the pure and the impure oil is so decided, not only after heating, but also after again cooling, that even a person unfamiliar with chemical manipulations

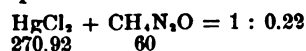
can easily recognize it. The adulterated or impure oil is yellow, the pure oil clear and green. If, however, too much of the copper salt had been taken, the oil will be green after cooling, even if oil of turpentine was present. Nevertheless, the yellow precipitate will distinguish it from the pure oil.

The butyrate of copper must be dry and in powder. To raise the temperature over 180° C. is not advisable, since the pure oil itself would suffer change in this case. And, although pure oil may even then be still recognized by the test, yet the latter is much less distinctive.

This test is very likely applicable also to oils of bergamot and orange.

Bichloride of Mercury and Urea: a new Antisyphilitic.

AMIDE compounds of fatty acids with mercuric oxides, such as glycol, asparagin-, alanin-mercury, have been heretofore already proposed as antisyphilitic remedies (by Dr. A. Wolff). Recently, another has been added to these by Dr. Jos. Schütz, which is not only inexpensive, but has the further advantage of not causing any pain. This compound is bichloride of mercury and urea. Schütz at first used a solution containing 1 Gm. of corrosive sublimate and 0.22 Gm. of urea in 100 Gm. of water, corresponding to the molecular proportions:



But since urea is usually a little damp, or contains traces of impurities, and a solution containing an excess of bichloride causes pain, a slight excess of urea is of advantage, particularly as it does no harm. Hence 0.5 Gm. of urea were employed instead of 0.22.

It is not necessary to prepare this solution every day fresh, as it will keep for at least a week and perhaps longer.—After *Pharm. Zeitung*, No. 33.

Vaseline and its Melting Point.

A CORRESPONDENT of the *Pharm. Zeit.*, in an article entitled "Russian Vaseline" (*Pharm. Handelsblatt*, No. 6, has occasion to point out that Kretschmer's method of determining melting points is liable to errors. Kretschmer introduces the substance into a narrow, almost capillary glass-tube closed below, introduces a droplet of mercury, and closes the other end of the tube likewise. On introducing the tube into water gradually being heated, the droplet of mercury is supposed to fall through the liquefied fat at the temperature of melting. It is, however, found that this takes place very irregularly, owing to the small calibre of the tube, as well as the still adhering fatty particles.

A more simple plan is the following, proposed by the writer of the article in the *Pharm. Handelsblatt*:

A small beaker was half filled with mercury. Upon this was placed a piece of the vaseline of about the size of a pea, and the thermometer bulb immersed in the mercury. The whole was introduced into into a drying oven covered with a glass plate, through a hole in which the stem of the thermometer projected. Heat was applied very carefully and slowly. The temperature was noted at the moment when the piece of fat melted on the surface of the mercury. The author had 3 Russian vaselines and 1 sample of Chesebrough's, which showed the following melting points:

a. Russian 1	43-44° C. (109.4-111.2° F.)
b. " 2	36-37° C. (96.8-98.6° F.)
c. " 3	36-37° C. (96.8-98.6° F.)
d. Chesebrough's	27-28° C. (80.6-82.4° F.)

The specific gravities of these were as follows:

a. 0.8520	c. 0.8545
b. 0.8560	d. 0.8570

It had been stated that vaseline is soluble in alcohol to about one-third its weight. To test this, the author shook 3 Gm. of vaseline with 30 C.c. of 95% alcohol, with application of a gentle heat, then allowed to cool to 6-7° C. (ab. 43° F.), filtered, evaporated the alcohol, and weighed the residue. This amounted

in sample	to only	or
a. 0.4138 Gm.	13.79%
b. 0.1093 "	3.94%
c. 0.1048 "	3.49%
d. 0.1763 "	5.88%

Estimation of Oil in Cattle Cake.

HAVING had occasion to estimate the percentage of oil in some sample of linseed and cotton cake, a very simple and effective method of conducting the analysis suggested itself to me, and a description of it may be of some use to analytical chemists.

It consists in placing the sample—together with about 50 C.c. of ether in a small well-stoppered bottle, tying the stopper down, and leaving the bottle in a vessel of boiling water for fifteen to thirty minutes. The solution of oil is decanted into a small weighed flask, the residue in the bottle washed with ether, and the washings added to the contents of the flask; the ether may then be distilled off, and the residual oil dried at 100° C.

A repetition of the process was found to give in no case more than 2 Mgm. of oil, thus appearing to be far more exhaustive than the method usually employed, which consists in either boiling the sample with ether in a flask fitted with an inverted condenser, or repeatedly drawing cold ether over the cake which is packed in a glass tube, while at the same time it is more expeditious and less troublesome.—SPENCER PICKERING, in *Chem. and Drug.*

The Toxic Effect of Insect Powder.

REGARDING the mode of action of this powder upon insects, the fact should be kept in mind that the lungs or breathing apparatus of the insect are very different to those of the vertebrate animal. Instead of lungs, as we have, set apart in one portion of the frame, for the definite object of supplying oxygen to the blood after the latter has become in need of it, the insect has a central tube, connected with the air by a row of orifices on each side of its body, from which smaller channels radiate to every part of its circulation. The animal lung demands two systems, as it were, of circulation, the arterial and the venous. The insect has but a single circulation, and the whole of its blood is being constantly and fully brought into contact with fresh supplies of air. Hence the instant and powerful effect of any toxic substance with which the air may be impregnated. Thus an insect may be almost instantly killed by the vapor of chloroform or ether or prussic acid. These facts are powerful arguments for the theory that it is the volatile constituents of insect powder which are fatal, and not the actual contact, necessarily, of its particles.—*Chem. and Drugg.*

Preserving Saccharine Liquids for Testing.

It is sometimes desirable to preserve saccharine liquids which are to be subjected to systematic investigations for a considerable time, and to do so is very difficult without the occurrence of fungous growths. W. Ostwald had occasion to look for a method capable of overcoming this difficulty. The ordinary antiseptics, such as corrosive sublimate, phenol, etc., were inapplicable, as they either produce a special inverting effect themselves (Ostwald's samples had to be so preserved that the sugar should undergo absolutely no change whatever) or entered into some reaction with certain acids to be added. Indifferent substances, such as carbon disulphide and chloroform, suffered gradual decomposition in the sugar solution, rendered it turbid, and produced decomposition products showing inversion. The only two substances finally found which prevented any change were camphor and petroleum.

The author obtained the best results by placing some lumps of camphor in the liquid to be preserved, and soaking the stopper used for closing the flask in petroleum.—*Journ. prakt. Chem.*, 1885, 308.

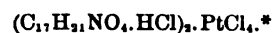
Glyceritum Acidi Carbolici for Earache.

MR. H. BENDELACK HEWETSON, of Leeds, read a paper before the meeting of the International Otological Congress, Basle, last year, in which he first commented on the general anæsthetic as well as antiseptic properties of carbolic acid. He had frequently, he said, after operating, lost to a great extent his sense of touch for a time, from constant immersion in the solution of carbolic acid which is used for instruments. In nearly all operations (the removal of a breast, for instance), the glyceritum acidi carbolici is applied to the wound to stop the after-smarting, and this it does effectually. Then arose the application of the glyceritum acidi carbolici to the exposed nerve in toothache. The relief is absolutely instantaneous if the tooth-pulp is exposed, the patient passing from the severest pain to that of a state of bliss, which all testify to who have experienced relief from toothache. When earache is due to toothache, which it is in a large number of cases, this application of the glycerin and carbolic acid cures the earache by re-

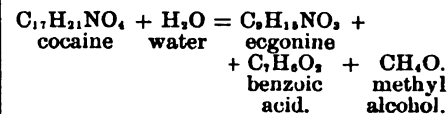
lieving the toothache. Mr. Hewetson went on to say that times without number he had in cases of acute earache injected a solution of carbolic acid and glycerin, and that it invariably stops the pain. In cases of earache from periostitis, either in cases of chronic otorrhœa or in uncomplicated cases of inflammation of the external auditory meatus, the relief to the pain is not so rapid; but if the carbolic acid and glycerin be allowed to remain in the meatus, then relief from pain is obtained in from ten to thirty minutes. The proper way to apply the injection is, to draw the lobe of the ear forcibly upward and backward, as in syringing the ear, to straighten the entrance to the meatus, and then allow the fluid to trickle gently down one side, whilst the air escapes up the opposite side. In cases where the meatus is very swollen at its orifice, he has injected the solution up a fine elastic catheter well covered with vaseline to promote its easy passage, and in this way he has relieved earache when it could not have been alleviated, except by a hypodermic injection of morphia or such means. Mr. Hewetson prefers the British Pharmacopœia strength to weaker solutions. He believes the application would be very useful in the earache of scarlet fever.—*Chem. and Drugg.*

The Chemical Constitution of Cocaine.

G. CALMELS and E. GOSSIN have re-examined the chemical constitution of cocaine, and their analysis of the chloro-platinate of cocaine leads to the formula



Lossen has shown that cocaine is split up, by concentrated acids, into ecgonine, benzoic acid, and methylic alcohol, thus:



This splitting up is now found by the authors to take place not only under the conditions mentioned by Lossen (heating in a closed tube with hydrochloric acid), but also by Kraut's method (heating in a closed tube with baryta). The products were under all circumstances identical with those given by Lossen.

From a series of investigations made with ecgonine, the authors conclude that there is a close relationship between the alkaloids tropine, cocaine, ecgonine, and isotropine.—*Compt. Rend.*

Elixir of the Phosphates of Iron, Quinine, and Strychnine.

AT a recent meeting of the New York German Apothecaries' Society, Dr. A. Tscheppé made the statement that Wyeth's Elixir of Phosphate of Iron, Quinine, and Strychnine never turns dark, but always remains bright-green; and further, that it contained no phosphoric acid. A very similar preparation may be produced by the following:

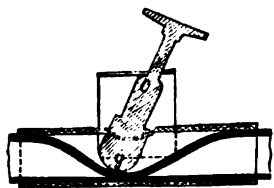
Sulphate of Quinine.....	f. 3
" " Strychnine.. gr.	2½
Tincture of Citro-chloride of Iron (Tasteless T. of I.).....	f. 3
Simple Elixir, enough to f.	3 16

The alkaloidal salts are to be dissolved in the tincture, and the elixir then added. If the quinine is reduced by ½, the product becomes more stable.—After *Deutsch-Am. Apoth.-Zeit.*

* Dragendorff, *Analyse v. Pflanzen*, etc., p. 364, gives the formula $C_{17}H_{21}NO_4$, which is probably based on an error.

DROPPING FLASK.

F. V. POOL recommends an improved form of dropping flask for use in volumetric analysis. [We should have said in stathmetic analysis, in which the amount of test liquid is weighed instead of measured, so as to eliminate the error due to differences of temperature.] The dropping flasks in use at the present day are few in kind and very simple, being nothing but small flasks of varying capacity, provided with a top or side-tube, and open to the objection which is found in using the burettes of Gay-Lussac and Bink. The flask here shown is an improvement upon existing forms, and has been used for some time in the laboratory and with a great deal of satisfaction. It consists of a light, flat-bottomed flask of a size determined by the capacity of the balance upon which it is to be weighed. From one side, near the bottom, a narrow tube starts and reaches up a little higher than the body of the flask, being then turned outward, like the side-tube of a Gay-Lussac burette, which it resembles. In the neck of the flask a small hole is blown, which, during the operation of dropping, is governed by the thumb of the manipulator. Into the neck of the flask a rubber stopper is fitted, and through this stopper a short thistle-tube is passed. The upper part of the latter is covered by a piece of thin sheet rubber securely fastened by a piece of thread. The flask filled with the standard solution is first counterpoised on the balance. It is then grasped around the neck, the thumb being placed very near the small hole in the side, and the forefinger held just over the rubber membrane on the top. The flask is then tipped, so as to deliver the solution through the side-tube, the rapidity of flow being governed by the thumb which closes the small hole in the neck at will. If at any time during the operation a drop is formed at the end of the tube, it can easily be forced out or drawn back into the flask by the control of the thumb and forefinger. By this means any amount of delivery may be obtained from part of a drop (by touching the end of the tube to the stirring rod) to a steady stream. After a sufficient quantity of the solution has been used, its weight is determined by replacing the flask upon the balance-pan and adding weights to balance the counterpoise in the other pan. In our own laboratory, we use for this purpose a balance whose capacity is 500 grammes in each pan, and a counterpoise consisting of a small pasteboard box partly filled with shot. With this it is the work of only a few seconds to counterbalance the flask, and after the titration is completed, the amount of solution used is quickly ascertained by the above method of leaving the counterpoise as it was, and adding weights to the pan containing the flask. The capacity of the latter is about 250 C.c., and one filling suffices for several operations, the counterpoise being changed each time by removing some of the shot. The convenience of this modified volumetric method can be appreciated by those who usually have a number of determinations of one kind to make in a day, and it will recommend itself to all on account of the ease of manipulation, accuracy, and slight cost of the apparatus. The adaptation of the above-described contrivance to a Gay-Lussac burette is obvious. All that is necessary is to adapt a rubber stopper and thistle-tube to the burette, and to blow or drill a small hole into the side of the burette about an inch from the top.—*Chemical News*.



Elges' pinch-cock.

A NEW PINCH-COCK.

W. ELGES, of Berlin, has obtained a patent on the pinch-cock here illustrated.

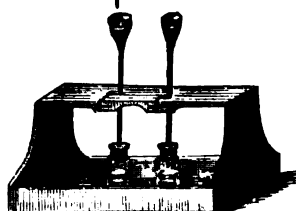
The rubber-tube to be compressed passes through a piece of metallic tubing, having a projecting nipple with an opening through which passes the stem of a pestle-shaped compressor, which is further guided by passing through a corresponding hole in the tube itself, at p. By pressing upon the upper end of the pestle, the rubber tube is compressed, and the flow of liquid arrested. An attachment is also described in the patent (not shown in the cut) by which the pressure is regulated with a set-screw.

APPARATUS FOR FILTERING MERCURY.

MERCURY which has become dirty and impure by use in safety-funnels, gas-troughs, or other chemical apparatus, may be readily freed from all suspended matters by filtration through fine leather. Prof. Pfaundler, of Innsbruck, has constructed an apparatus for this purpose, which is here illustrated. It consists of a cast-iron pipe, to one end of which a funnel is attached. The other end has a small projecting shoulder, over which a piece of leather is stretched, which is securely tied. One or more of these tubes may be placed in a rack, so that the leather-covered end dips into empty



Pool's dropping flask.



Pfaundler's mercury filter.

bottles. The impure mercury is poured into the funnels, and, by its own weight, is forced through the pores of the leather, in form of a fine rain, leaving the suspended impurities behind.

Notes on Kola Nut.

THOMAS CHRISTY has just published No. 8 of his *New Commercial Plants and Drugs*, from which we take some interesting notes on kola nuts, the seed of *Sterculia acuminata* R. Brown, called in various native dialects: *Kola (cola)*, *gourou*, *ombéné*, *nangone*, *kokkorokou*, *bissy-bissy*, *co-rooah*.

Mr. Christy, having become convinced of the value of the nuts, in 1878, recommended them to British Colonial planters, and he sent specimens to Kew and several professional gentlemen. The trees raised from the nuts which he sent out are now bearing fruit. Mr. Armstrong, when working with kola, found that it had the singular property of clarifying beer and spirit, and of greatly improving the beer. This fact is corroborated by Hecke and Schlagdenhaufen in their interesting work on kola, where they say the seeds are reputed to clarify and render healthy the most foul waters, and to make tainted meat edible.

The action of the kola nut in clarifying foul water is doubtless owing to the mucilage which the nut contains, which acts in the same way as the white of egg, or isinglass. At the Linnæan Society, one of the members gave an interesting account of the properties of the kola from actual experience. He stated that the foreman of his estate was in the habit of getting the worse for drink every Satur-

day, and shortly before his services were required, every Monday morning, his wife used to reduce kola nut into a paste, which the man was made to swallow, and in 30 minutes he was quite clear in his head again; further, it was maintained, that after the use of the Kola cure, a drunkard cannot return to stimulants for some days, without feeling nausea. At some of the garrison towns, a native sits at the roadside and sells the nuts as the men pass, by the time they reach the barracks, they are quite clear-headed, and the stupefaction caused by drinking spirits is gone. On the West Coast of Africa, Mahometans and Arabs beat the natives at drinking, by chewing at the same time a Kola nut, which prevents the bad effects of the liquor.

Now that there is a regular service of steamers to the West Coast of Africa, the demand for the nuts has greatly increased, and the price has gone up in consequence.

I now have to record one of the most important discoveries that has yet been made with the nut of *Sterculia acuminata*, i. e., that these nuts can be prepared by a special process and made into a paste that could not be distinguished from fine cocoa paste (made from *Theobroma Cacao*). This paste has been tested in this country in many ways, and the results are worth mentioning.

If Kola paste is mixed with cocoa, it gives a chocolate of a superior and finer quality than Caracas; if it is

mixed with three parts of a low class cocoa, it improves the latter, both in strength and flavor, to an astonishing degree. Chocolate made with kola paste is ten times more nutritious than chocolate made with cocoa, and one of my correspondents

writes me that his family and many of his friends have taken the kola-chocolate and found it very strengthening and the flavor pleasant, and that they have taken it for more than a year. Kola-chocolate is so nutritious that a workman can, on a single cup taken at breakfast time, go on with his work through the day without feeling fatigued; very little appetite is felt for the mid-day meal, showing that the well-known sustaining properties* of the nut are retained in the paste. Kola-paste has been examined by some of the most careful chocolate manufacturers both in this country and on the Continent, who are so pleased with it that they are willing to contract for supplies as soon as a favorable price can be quoted to them. Some delay in fixing a price is at present occasioned by the uncertain supply of raw or dried kola nuts and the largely increasing demand for this valuable fruit.

The British Government have had a supply of the paste in a pure state and have undertaken to test and experiment with it.

The investigations of Heckel and Schlagdenhaufen have shown that the yield of caffeine from the kola nut is greater than in most commercial teas and coffees; that the proportion of theobromine is greater than that contained in cocoa. In comparing the kola with coffee, tea, and cocoa, with regard to their nitrogenous principles, chemically defined and crystallizable, it will be found that the kola takes the first place. The physiological effects of kola nut and pure caffeine are identical. Kola nut is an undoubted stimulant in wasting diseases, and by its bitterness and astringency, acts as a powerful tonic in cases of deep-seated lesions of the digestive organs.

* See *New Commercial Plants and Drugs*, No. 8, p. 22.

Its place in therapeutics is far above that of mate (Paraguay tea), coca, and paullinia (guarana). In order that the properties of the nut might be tested therapeutically, I had fluid extracts made both from the fresh and dry nuts, and distributed. These have given very good results in cases of impaired digestion and diarrhoea.

These extracts, which represent in a fluid state an equal weight of the nut, gave better results in dipsomania than the nut itself in a fresh state, owing, no doubt, to the concentrated form of the remedy, and its more rapid absorption by the stomach. In cases of diarrhoea, to which Europeans are so subject in the tropics, fluid extract of kola has effected many cures, several cases being old and severe. Dr. Heckel, in his paper, mentions several cases of what is known as Cochin China diarrhoea cured by this nut, given both as a fluid extract and as a wine, thus supporting the evidence of those who have given the nut a trial in this country, and reported upon it in the various medical journals.

I strongly advise planters in our colonies who have low, damp lands, to cultivate this very important tree, for they will find that the demand will increase year by year for this product. It is much more easily cultivated than ordinary cocoa, and yields a large crop twice a year; it does well in low steamy lands, and gives large crops of fruit in some of our West India islands. The kola tree will flourish well at elevations lower than 1,000 feet, and even at the sea level produces crops in the fourth year from planting the seed, and full crops from the tenth year estimated at 120 to 150 lbs., the gathering of the crops being rendered easy by the natural drooping of the branches. With regard to the preservation of the nuts, they have come over to me in either baskets or barrels, lined with the leathery leaves of the "bal" tree. Some were sent to me in dry loam, and they were appeared as fresh as the day they were gathered. I have by me now a barrel which reached me some eighteen months ago, and of which more than fifty per cent are still perfectly fresh-looking, having retained their beautiful red color. I attribute this result to not having unpacked or in any way disturbed them since their arrival.

The best way to ship them for commercial use is, after freeing them from the husks, to carefully and slowly dry them in the shade, where a current of air will pass over them; there is, then, very little shrinkage, and fine dry nuts are obtained not in any way similar to the small shrivelled chips which I have sometimes received from the west coast of Africa, which unmistakably showed that the drying process resorted to in such cases was either by the heat of the sun or that of an oven.

Quantitative Determination of Cinchona Alkaloids.

Y. SHIMOYAMA has made a critical comparison of various analytical methods for estimating quinine in a mixture of cinchona alkaloids, and has come to the conclusion that its precipitation as quinine oxalate is the most reliable so far known. He gives the following directions:

At least 0.5 Gm. of the alkaloids are dissolved in a beaker in about 30 or 40 C.c. of water, with the addition of the least possible quantity of very dilute acetic acid, with gentle heat, the solution filtered from any undissolved substances into a tared beaker, the filter washed, and the united liquid neutralized with very dilute soda solution. If necessary this should be filtered. The filtrate is mixed with a sufficient quantity of solution of sodium oxalate saturated at 18° C., the proper amount being 1 C.c. for each 0.1 Gm. of the mixture of alkaloid

taken for analysis. The liquid is now concentrated on a water bath to 8 or 10 Gm., until a copious precipitate makes its appearance on cooling. Should a slimy mass separate during the concentration, it must be filtered off and well washed with boiling water. To the contents of the beaker there are now added 10 to 15 C.c. of water, and the whole stirred until the slimy mass which separates together with the precipitated oxalate is completely redissolved, and the whole is then set aside for three hours at a temperature of 18° C., during which time it should be repeatedly stirred. The contents of the beaker are now weighed, the precipitate is collected on a double filter and washed a few times (with the aid of a filter-pump) with a solution of oxalate of quinine saturated at 18° C.

In order to dissolve any co-precipitated oxalate of cinchonidine, the precipitate is now washed with the above-mentioned saturated solution of oxalate of quinine, into a flask, the latter briskly shaken during fifteen or twenty minutes, and then set aside for two hours at 18° C., the shaking being occasionally repeated. Finally, the precipitate is collected upon a double filter (dried at 110° C. and tared), well washed with the saturated solution of oxalate of quinine, with the aid of the filter-pump, then dried and weighed.

From the weight thus found it is now necessary to deduct the amount of quinine oxalate which had been soaked up during the washing by the filter and by the precipitate. According to Shimoyama's investigations, this amounts to 0.00069 Gm. for every gramme of solution of oxalate of quinine. To make the correction, the obtained quantity of oxalate of quinine is first deducted from the total weight of the contents of the beaker. The difference represents the quantity of mother-liquid. This is then multiplied with 0.00064, and the product added to the quantity of quinine oxalate found.

The amount of pure quinine is found by multiplying the figure obtained for oxalate of quinine with 0.878 (since 1 Gm. of oxalate of quinine contains 0.878 Gm. of pure quinine).—*Arch. d. Pharm. and Ph. Zeit.*

Behavior of Quinine towards Oxalic Acid in Presence of Cinchonidine.

Y. SHIMOYAMA's method of estimating quinine by means of oxalic acid, described above is criticised by Dr. J. E. de Vrij, who says:

"After I had found that all basic sulphates of quinine of the market contained cinchonidine, which varies in quantity from 4 to 13 per cent, I made an attempt to determine the quinine as oxalate. For this purpose 10 Gm. of sulphate of quinine (containing by optical test 11 per cent of sulphate of cinchonidine) were dissolved in 400 Gm. of boiling water, and a solution of 4 Gm. of ammonium oxalate added. I expected that almost all of the quinine would be obtained as crystalline oxalate, and that the cinchonidine would nearly all remain in the mother-liquor. Experience, however, showed that I was deceived, since the mother liquid of the oxalate of quinine, when treated with sodium tartrate, yielded 7.33% of quinine tartrate (determined optically). It follows therefore that the bibasic oxalic acid is not capable of effecting a separation of quinine from cinchonidine.—*Arch. d. Pharm.*, 223, 349.

The British Pharmacopoeia, according to the *Pharmaceutical Journal*, is completed, all but the index. It will be about one hundred pages larger than the preceding edition, and will include upwards of one hundred new remedies and preparations. Only a score of articles have been omitted.

Repairing Platinum Vessels.

WHEN platinum vessels, after long-continued use, begin to show signs of wear, and become perforated with minute pin-holes, they are usually accounted of no further utility, and are disposed of as scrap; not that it is impossible to repair them—for with fine gold wire and an oxy-hydrogen jet this is easily feasible—but that the proper appliances and skill are not in possession of all. Irrespective of the manipulation of the hydrogen jet, it is rather difficult without long practice to hold the end of the fine wire precisely over the aperture and to keep it in position. It occurred to me that, if the gold in a finely-divided condition could be placed in very intimate contact with the platinum judging from the fusibility of gold-platinum alloys, union could be effected at a lower temperature over the ordinary gas blow-pipe. I tried the experiment, and found the supposition correct. The substance I used was auric chloride, AuCl₃, which, as is well-known, splits up on heating, first into aurous chloride, and at a higher temperature gives off all its chlorine, and leaves metallic gold. Operating on a perforated platinum basin, in the first instance I placed a few milligrammes of the auric chloride from a 15-grain tube precisely over the perforation, and then gently heated to about 200° C. till the salt melted and ran through the holes. A little further heating caused the reduced gold to solidify on each side of the basin. The blowpipe was now brought to bear on the bottom of the dish, right over the particular spots it was wished to solder, and in a few moments at a yellow-red heat (in daylight) the gold was seen to "run." On the vessel being immediately withdrawn, a very neat soldering was evident. The operation was repeated several times till in a few minutes the dish had been rendered quite tight and serviceable.

Using the gold salt in this way, the principal difficulty experienced in holding gold wire unflinchingly in the exact position vanishes, while only a comparatively low temperature and small amount of gold is necessary. Care must be taken to withdraw the platinum from the flame just at the moment the gold is seen to run, for if the heat be continued longer, the gold alloys with a larger surface of platinum, spreads, and leaves the aperture empty. As in the case of all gold-soldered vessels, the article cannot afterwards be safely exposed to a temperature higher than that at which the soldering was effected, and on this account it is advisable to use as small an amount of auric chloride as possible. When the perforations are of comparatively large size, the repairing is not so easy, owing to the auric chloride, on fusing, refusing to fill them. I find, however, that if some spongy platinum be mixed with a few milligrammes of the gold salt, pressed into the perforation, and heat applied as directed, a very good soldering can be effected. It is well to hammer the surface of the platinum while hot, so as to secure perfect union and welding of the two surfaces. This may be done in a few minutes in such a manner as to render the repair indistinguishable. Strips of platinum may be joined together in much the same way as already described. A few crystals of auric chloride placed on each clean surface, and gently heated till nearly black, then bound together, and further heated for a few moments in the blowpipe flame. Rings and tubes can also be formed on a mandrel, and soldered in the same fashion, and the chemist thus enabled to build up small pieces of apparatus from sheet platinum in the laboratory.—J. W. PRATT in *Chem. and Drugg.*

THERMO-REGULATOR.

THE apparatus here described has been designed by A. Fock for the purpose of producing either constant temperatures or such constant variations of the latter as may be determined beforehand.

A is a cylindrical vessel, made of tinned iron, into which a smaller one, B, is firmly soldered. At a and b the interior of the double-walled space communicates with the pipe c, which passes through a condenser, C, placed above, best in form of a worm. Below the place where the pipe is attached to b, a small stop-cock, r, is situated, by means of which communication may be established with the receiver, k. At e, a thermometer is inserted, and the same opening serves also for introducing the proper liquid into the vessel, A. Now, if some substance of high boiling point, such as paraffin, olive oil, or fusible metal, is placed into the vessel B, and the liquid in A raised to boiling while the stop-cock r is closed, the contents of B would acquire the constant and even temperature of the vapor of the boiling liquid. If, on the other hand, a liquid of variable boiling point, such as petroleum, is put into A, it will be possible to obtain any constant temperature which a mercury thermometer can indicate. For instance, if a temperature of 280° F. is to be attained, and then maintained, enough of the lighter portions of the petroleum are distilled off, until the above temperature has been reached. The stop-cock r is now closed, and the condensed vapor of the remaining liquid will continue to flow back into the vessel A. At the same time the contents at B will gradually acquire this temperature and retain it. If petroleum is used for this purpose, it is advisable to keep on hand a series of different fractions which should not vary by more than 40° or 50° C., but which may be prepared beforehand by this very apparatus. The differences of temperature of different portions of the bath (B) amount to not over 20° C.

This apparatus will be found exceedingly useful for many purposes, among them for the determination of melting points, since it permits a very gradual raising of the temperature, but allows the condensed liquid to run off only very slowly through the stop-cock r. The disadvantage caused by the fact that the apparatus is non-transparent can be overcome in various ways. The melting point may be indicated either by causing an electric circuit to close at the proper moment, or a small mirror may be attached over the vessel B in such a manner that it is inclined in an angle of about 45 degrees.

If the vessel B is left empty, and merely closed with a large flat cork, or other contrivance, a very serviceable hot-air bath is obtained.

The size and shape of the apparatus may be adapted to its special use. If no higher temperatures than 180° C. are to be attained, it may be constructed of tinned iron, well flanged and soldered with soft solder. For higher temperatures, however, hard solder must be used. [We think it will be found cheapest and safest in the end to use hard solder exclusively.] —*Ber. Deutsch. Chem. Ges.*, 1885, 1, 124.

Casein Mucilage.

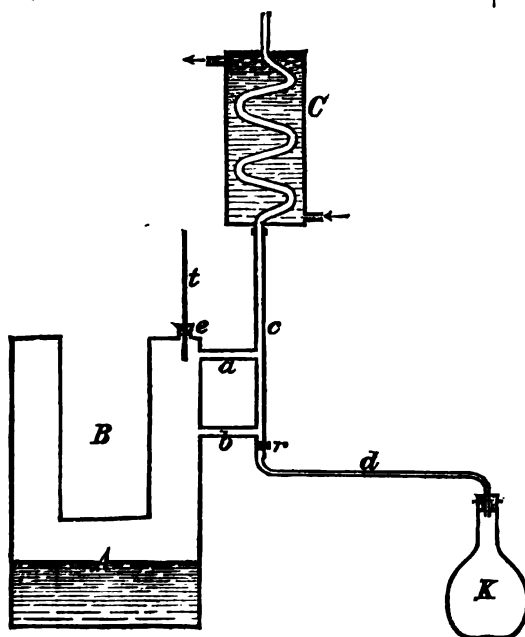
A VERY serviceable adhesive mucilage may be prepared in the following manner:

Heat milk with a little tartaric acid, whereby casein is separated. Treat the latter while still moist with a solution of 6 parts of borax in 100 of

water, and warm gently while stirring, which will cause the casein to be dissolved. Of the borax solution enough should be used to leave only a little undissolved casein behind.—R. KAYSER, in *Mith. d. Bayr. Gewerbenus*.

The so-called Fat in Cinchona.

ALTHOUGH several authors have referred to the mixture of substances extracted from cinchona barks as containing "fat" or "wax," its history has not hitherto been satisfactorily made out. Professor Flückiger, in his "Chinarinden," mentions a "wax," sometimes colored green by chlorophyll, which was obtained by Herr Kerner in colorless lamellæ, and named "cinchoceratin." It was afterwards prepared in a purer form by Herr Helms, who thought it was neither a fat nor a wax, but a body resembling betulin or cerin. The investigation has now been taken up by Dr. Hesse, who reports (*Annalen d. Chemie*, ccxxviii., 296) that he finds cinchona barks to contain, in varying quantities, three isomeric bodies of the formula $C_{10}H_{16}O$, one of which, "cupreol," is met with especially in cuprea bark; another, "cinchol," occurs only in true cinchona barks and in all of them;



Fock's thermo-regulator.

whilst the third, "quebrachol," which would appear to be identical with a body discovered by the author in quebracho bark (*Pharm. Journ.* [3], xii., 785), has been observed only in Ledger barks. All three bodies belong to the class of cholesterines, to which also belongs the phytosterin prepared by the author from the calabar bean. They resemble one another very closely, but can be distinguished by their acetyl compound. Dr. Hesse considers that the bodies referred to as having been described by Messrs. Kerner and Helms consisted chiefly of cinchol.—*Pharm. Journ.*

"Dover's Solution" and "Red Drops."

A PREPARATION, known as *Liquor Doveri*, *Dover's Solution* (*Liquor Ipecacuanhæ et Morphine*), which originated with Dr. J. D. Coleman, of Julietstown, and afterwards of Trenton, N. J., and is quite popular in several localities, is prepared as follows:

Acetate of Morphine... 60 grains.
Diluted Acetic Acid... 1 fl. oz.
Dilute Alcohol..... 7 fl. oz.
Wine of Ipecac..... 2 fl. oz.

Dissolve the acetate of morphine in the acid, add the diluted alcohol and wine of ipecac, and mix the whole thoroughly. Set aside for 24 hours, then filter through paper,

Mr. Edwin H. Hess, from whose thesis on the subject (*Am. Journ. Pharm.*, 1885, p. 235) we take this formula, adds: "In Trenton, where I became acquainted with it, it may be gotten from any pharmacist, and is always kept in stock, is prescribed by almost all the physicians, and has a local reputation among the people as a remedy for all ills common to mankind, probably as great as paregoric."

The above enters into the composition of a preparation known as

Red Drops.

Comp. Tincture of Catechu... 5 fl. oz.
Spirit of Camphor..... 1 fl. oz.
Dover's Solution..... 2 fl. oz.

This is quite an efficient remedy for diarrhoea, dysentery, cholera morbus, and all summer complaints in general. Locally it has acquired no mean reputation among the physicians and others, and is thought by some to be equally as good, if not superior to the best-known cholera mixtures.

Effect of Light upon Iodoform Preparations.

EDUARD FABINI has investigated the peculiar change which certain preparations of iodoform, such as an ointment made with vaseline, or a solution in collodion, undergo some time after being prepared.

It has been supposed that some constituent or property of the vehicle caused a decomposition of the iodoform, but this appears to be not the true cause, though it may occasionally promote the change.

If hyposulphite of sodium, for instance, is added to iodoform ointment, it does not remedy the evil, simply because no free iodine, recognizable by chloroform, is separated. The same is the case with iodoform collodion and both are thereby different from an ointment containing iodide of potassium, in which the change is due to the separation of free iodine.

The real cause of the alteration in the preparations above named is the effect of light (daylight, sunlight). This may be shown by exposing a glass-vessel containing iodoform ointment (made with petrolatum) to direct sunlight, in such a manner that a portion of the surface turned toward the light is protected from the latter by a strip of paper pasted over it. If the latter be removed, say after ten minutes, the dark tint which the unprotected surface has acquired by the exposure will strike the observer as quite remarkable.

Pure iodoform, when exposed to sunlight by itself, does not show any change or decomposition. This appears to occur only when it is exposed while in intimate contact with organic substances or solvents.

It follows, therefore, that such iodoform preparations should be prepared by artificial light, and should be kept protected from the light. The iodoform collodion, especially, should be only dispensed in dark-colored glass vessels.—*Pharm. Post*.

Vaseline in Pastry.

It was stated at a recent meeting of the Hygienic Council of the Department of the Seine at Paris, that it had been found that vaseline was being used in pastry in place of butter or fat. Pastry thus made will keep much longer than if butter be used, but vaseline has no nutritive properties, and its effect on the digestive apparatus has not been ascertained. The Council, therefore, advises that its use for pastry making shall not be permitted in France,

New Method of Milk Analysis.

For the purpose of insuring a finer comminution of the dry residue, so as to facilitate the complete extraction of fat, Matthew A. Adams recommends the following procedure:

Filtering paper is cut into strips, 22 inches long by 2½ inches wide, and rolled spirally around a glass-rod, so that the outermost turn is a less than 1 inch in diameter. These rolls are then dried at 100°, their weight, when dry, noted upon them with lead-pencil, and then put aside for future use.

A portion of about 5 C.c. of the milk to be examined is put into a small beaker glass, 2 inches high and 1½ wide, the whole weighed, and one of the above-described paper spirals dipped into it. In a few minutes the paper will have soaked up the milk, and, with a little dexterity, the roll may be lifted out and laid with its dry edge upon a plate of glass. The beaker is immediately weighed again, the loss of weight representing the amount of milk soaked up by the paper. In drying the paper spiral, care must be taken that none of the milk reaches the plate of glass. After one hour's drying it is ready for treatment with ether or benzin, which need never exceed three hours, after which time all fat will have been extracted, and the residuary paper-roll, when dried again, indicates by its loss in weight the quantity of the extracted fat.

The results quoted by the author exceed in accuracy those obtained by any other method.—*The Analyst*, 1885, 46.

[This method may also be used in many other cases with advantage. The liquid soaked up by the paper spiral covers so large a surface that evaporation of any volatile solvent must be quite rapid.]

Gum Arabic.

THIS is influenced by the Soudan war. The statistics of the London markets do not distinguish Egyptian gum from other kinds. Here are the figures of the market at Trieste, dealing with Egyptian gum alone:—

	1880	1881	1882	1883	1884
	Ser- ons.	Ser- ons.	Ser- ons.	Ser- ons.	Ser- ons.
Stocks, Jan. 1st...	1,235	5,906	3,521	3,914	732
Imports.....	30,637	16,843	12,373	10,333	5,963
Total.....	31,872	22,749	15,793	14,297	6,705
Deliveries.....	15,966	19,238	11,879	13,575	5,850
Stocks, Dec. 31st.	5,906	3,521	3,914	732	855

The rise in price foreseen in 1882 as a result of Arabic rising dates from September, 1883, as the arrivals at Cairo decreased, and the stocks shrank there and at the central market. In January, 1884, in consequence of the success of the Mahdi, the price had doubled (in London 110s. as against 55s. in the summer of 1883), but over eager sales reduced it in February to 80s. to 85s. Since then there has been a steady rise, and to-day gum cannot be bought under 120s. to 125s. The further course of the article depends on the collections in the Soudan, which must be completed before the rains come on at the end of February. The chance of this is small, and depends on an urgent need of money among the tribes. In favorable circumstances, then, fresh supplies may arrive from the Soudan in the second half of this year. Till then the stocks must hold out, though the price is very likely to increase, especially for the picked sorts, which have hitherto been too cheap. If the imports fail, there will be complete scarcity, and it is impossible to say what prices will be reached. On this chance a "ring" in gum Senegal has been founded in Bordeaux during the last few weeks. After securing the old stocks and the expected imports, it has dictated a rise from 180 f. to 220 f. Even in January it

could be bought at 170 f. to 175 f., and the remaining stocks seem to be by no means inconsiderable. Some say the collection in Senegal has turned out ill this year, but this needs confirmation.—*Chem. and Drugg.*

Precaution in Keeping Bromine, Nitric Acid, etc.

FERD. FISCHER calls renewed attention to the necessity of using care in keeping stock-bottles of bromine, fuming nitric acid, and other similar substances of corrosive or otherwise dangerous properties. Having had an accident with a two-pound bottle of bromine, which broke in the store-room of its own accord, he advises that all vessels containing such substances be placed into stone jars, containing some water, and closed with stone covers.

[This advice is not new, but cannot be too often repeated. Phosphorus especially should be treated in the same manner.—Ed. A. D.]

Influence of Light upon Ether.

A SHORT time since, Herr Buchner reported that he had found that commercial "pure" ether, even after further rectification, in contact with cadmium iodide, appeared to give rise to the formation of some oxy-iodide, iodine being liberated at the same time. At first he was disposed to attribute the reaction to some persistent impurity in the ether, but he has now come to the conclusion (*Chem. Zeit.*, May 13th, p. 691), that it is due to dissolved ozone. Schönbein had already observed that ether in contact with atmospheric air is capable of giving rise to the formation of ozone, and the author has ascertained that this change takes place with extreme rapidity, under the influence of diffused sunlight; but that freshly rectified ether will remain free from ozone for several weeks, if kept in the dark. The practical lesson drawn is that in order to preserve ether in a proper condition it should be protected from exposure to light.—*Pharm. Journ.*

Determination of Organic Matter in Drinking Water.

It has often been noticed that discordant results were obtained by different experimenters when determining the amount of organic matter in water by heating with permanganate of potassium.

O. Kaspar has recently observed that if the heat is raised to boiling, and continued more than ten minutes, the results obtained are much too high. On the other hand, if the temperature does not exceed 70° C. (158° F.), and the heat is continued for not over 5 minutes, constant results are obtained. He even prefers a temperature of 50° C. (122° F.). He directs to heat the water with the reagent at this temperature, adding a sufficient quantity of the latter, to retain a red tint in the liquid at the end of the 5 minutes, then to add standard oxalic acid and to determine the excess of the latter by titrating with standard permanganate.

Purification of Impure Fatty Oils.

ACCORDING to G. Fischer, fatty oils which have been used and have become dirty and impure may be restored to their original bright condition by warming them first to a temperature of 40° C. (104° F.), and then adding, under constant stirring, a previously prepared mixture of equal weights of concentrated sulphuric acid and 95% alcohol. Two pounds of this mixture are sufficient for 100 pounds of oil.

If sulphuric acid alone were used,

a portion of the oil would be resinsified. Being added partly as sulphethylic acid, the effect is different. It mixes uniformly with the oil, afterwards causes a turbidity which gradually ends in the formation of a blackish sediment. The oils which have now become bright, are then poured off or drawn off from the latter, washed with boiling water to remove every trace of sulphuric acid, and then allowed to clear by standing.—*Neueste Erf. u. Erf.*

Cologne.

EUGEN DIETRICH has recently published the following formulæ in the *Pharm. Centralhalle* (1885, 104):

	Parts
Oil of Bergamot.....	10
" " Lemon.....	5
" " Lavender, rect., best ..	1
" " Rosemary, French, rect.	5
" " Cloves.....	1
" " Neroli, best.....	1
" " Ylang.....	½
Acetic Ether.....	1
Diluted Acetic Acid.....	1
Alcohol.....	825
Distilled Water.....	150

Mix, heat to 70° or 75° C. (158° to 167° F.), let stand a few days in a cool place, then filter.

The heating brings the product closer to a distillate and renders it much superior to a mere mixture.

An addition of musk or ambergris is out of place, as long as it is desired to produce an imitation of the original eau de Cologne, which does not contain a trace of either.

Genuine Cologne is of two kinds, acid and alkaline. The former is represented by the formula given above, while the latter contains a little ammonia. A formula for this is given here:

	Parts.
Oil of Bergamot.....	10
" " Lemon.....	5
" " Rosemary, best.....	2
" " Neroli, best.....	1
" " Lavender, best.....	½
Stronger Water of Ammonia..	½
Alcohol.....	885
Distilled Water.....	100

Mix, heat to 70° or 75° C., set aside in a cool place for a few days, then filter.

In this mixture, a smaller quantity of the oils of lavender and rosemary has been used, since both oils acquire, in the presence of free alkalies, a disagreeable, sharp odor.

For baths, a cheaper kind of cologne may be prepared as follows:

	Parts.
Oil of Citronella.....	2
" " Lemon.....	2
" " Bergamot.....	5
" " Rosemary.....	5
" " Sassafras.....	2
" " Cloves.....	1
" " Wintergreen.....	1
Acetic Ether.....	10
Alcohol.....	800
Distilled Water.....	200

Treat like the preceding.

The average quantity required for a full bath is about 50 Gm. (or about 1½ fl. oz.).

Potassic-Antimonic Oxalate a Substitute for Tartar Emetic in the Arts.

TARTAR emetic is being gradually replaced in dyeing and printing by a new antimony preparation having the composition $\text{SbK}_2\text{C}_2\text{O}_6 + 6\text{H}_2\text{O}$, and containing 23.67 per cent Sb_2O_3 . The commercial product crystallizes in white needles resembling oxalic acid or Epsom salt, which are readily soluble in water. It is sold at a moderate price as a substitute for tartar emetic in fixing tannin colors.—*Dingl. Pol. J.*

Simple Process for Separating Zinc.

As a convenient means for the separation of zinc from iron, nickel, cobalt, manganese, and aluminium, the author recommends the conversion of these metals into formates, and the treatment of the solution with sulphuretted hydrogen. As far as his experiments extend, the zinc is always completely precipitated. The precipitate is always free from manganese and aluminium, and also from nickel, cobalt, and iron, if the solution contains a sufficiency of free formic acid (at least 15 to 20 C.c. of acid of spec. grav. 1.2 in 250 to 500 C.c. of liquid), and those metals are not present in too great excess. In other cases, traces of foreign sulphides are sometimes mixed with the zinc hydrosulphide, and give it a reddish-brown tint. Iron is most easily thus carried down, nickel and cobalt less readily. These impurities are in quantity very trifling. For their entire removal, the precipitate after filtering and washing is re-dissolved in nitric acid, supersaturated with ammonia, then with formic acid, and once more precipitated with sulphuretted hydrogen. Such a repetition—certainly not always needed—of the separation would deprive this method of its essential advantages, if we had not a means for making zinc sulphide capable of easy and rapid filtration. To this end sulphuretted hydrogen is passed into the *hot* solution.

The zinc sulphide falls as a granular precipitate which filters and washes quickly and clearly. For washing, sulphuretted hydrogen water is used to which a little ammonium formate and formic acid have been added.

On passing sulphuretted hydrogen into the hot solution, a little zinc sulphide (about 1 milligramme) is deposited on the sides of the glass, so firmly that it cannot be rubbed off. This film, after rinsing the glass, is dissolved off in a little nitric acid, and the solution is added to that of the main precipitate if the precipitation has to be repeated. If this is not necessary, or, if the second precipitation is already in process, the nitric solution of the film is mixed with ammonia and ammonium sulphide, then with formic acid until the reaction is acid, and the whole is poured upon the filter to the precipitate which is already washed.

When dry, the zinc-sulphide is not horny and brittle like that thrown down from an acetic solution, but pulverulent, and it can be readily removed from the filter without loss.—Wm. HAMPE, in *Chem. Zeit.* (and *Chem. News.*)

First Discovery of Bacteria.

THE first who discovered bacteria was the celebrated Antony Van Leeuwenhoek, who may be called the father of microscopy. On September 14th, 1683, he reported to Francis Asten, member of the Royal Society, London, that he had observed by means of the microscope, in the white matter taken from between his teeth, live animalcules of graceful motion (*animalcula admodum exigua jucundissimo modo sese moventia*). Leeuwenhoek distinguished and described several varieties, which may even now be readily recognized. Nine years afterwards, in September, 1692, he sent new drawings to London which were still more exact.—After *D. Arch. f. Gesch. d. Med.*

Completion of the new Belgian Pharmacopœia.

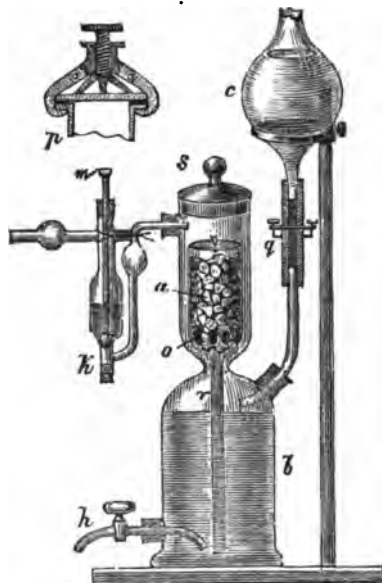
At a recent meeting of the Belgian General Pharmaceutical Association, Professor Gille stated that the new edition of the Belgian Pharmacopœia, completely printed, had been handed over to the Government by the Commission on the 24th of April,

IMPROVED GAS GENERATORS.

In spite of the great number of forms of gas generators, the improvements appear to be still far from having reached perfection.

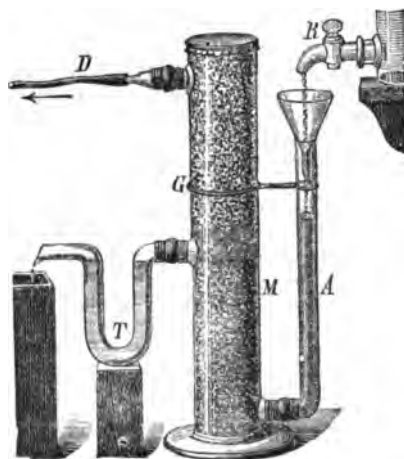
Wollny has lately drawn special attention to one defect inherent to all, viz., that they do not permit, without much trouble, refilling the apparatus, while in use. To remedy this, he has constructed the following apparatus.

The substance from which gas is to be generated is placed in the funnel-tube *a*, the thin end of which reaches nearly to the bottom of the vessel *b*, and which has several holes at *o*, for admitting the acid. The latter flows from the reservoir *c* into *b*, and when



Wollny's gas generator.

it rises high enough, passes through the holes *o* into the funnel. As soon as action has begun, a concentrated saline solution is commenced to be formed, and this flows to the bottom of *b*. Being denser than the acid, the latter remains on top, and mixes but



Tissandier's gas generator.

little with the denser salt solution. When the latter accumulates, it may be drawn off through *h*, while new acid is admitted from *c*.

As the gas escapes from the apparatus, it passes through a small washing apparatus, where the passage of the gas may be arrested by pushing down the plunger passing through the upper cork *m*.

When the solid, from which the gas is generated, has been exhausted, this plunger is pushed down so as to prevent the gas from passing into the wash-bottle proper, the lid *s* is next lifted up, the funnel-tube *a* taken out, refilled and replaced. The stopper *s* having been replaced, the cork *k* is gently loosened, until enough gas has passed through to displace all the air admitted by opening the apparatus. The cork is then closed, the plunger raised, and the current of gas will continue to pass as it did before.

When the apparatus is not in use, the faucet *g* is closed. The stopper *s* is a glass-stopper around which a rubber-band is stretched. In place of it, a rubber-washer, glass-plate and clamp may be used, as shown in the small annexed cut.

In conjunction with the above, we present another form of generator, designed by Tissandier. The acid flows from a reservoir through the stopcock *R* into the bottom of a tall cylindrical jar filled with the solid substance (sulphide of iron, marble, etc.). The dense saline solution flows off through *T*, and the generated gas passes out through *D*.—*Génie civil*.

[Note.—We would rather admit the acid through the tubulure situated in the centre of the cylinder, and remove the dense salt solution from the bottom, which would produce the same arrangement as that shown in Wollny's apparatus. As it is now, the fresh acid admitted has to mingle with the dense saline solution, while in the other case it would do this but little.—Ed. A. D.]

The Determination of Ethyl Nitrite in Spirit of Nitrous Ether and Kindred Preparations.

THE British Pharmacopœia test for the presence of nitrous compounds in the spirit of nitrous ether is a satisfactory one from a qualitative point of view, but it can be applied in a more advantageous manner than is directed in the British Pharmacopœia by mixing the sample with a strong aqueous solution of ferrous sulphate, and then pouring concentrated sulphuric acid down the side of the tube in such a manner as not to mix with the lighter liquid. A deep brown zone will be produced at the junction of the two strata, which, in the case of good samples, becomes intensified by cautious agitation. Many samples of spirit of nitrous ether give a brown color with ferrous solution before the addition of acid, but the coloration is always considerably enhanced by the sulphuric acid, and strong acid is far preferable to dilute.

I have tried the experiment of shaking a sample of spirit of nitrous ether with neutral sodium carbonate, filtering, and testing the filtrate with a solution of ferrous sulphate without adding acid. No reaction was at first produced, but the brown color gradually developed, and after a few minutes was very intense. The iron test has the great advantage of really indicating the presence of nitrous compounds instead of leaving their existence to be inferred from some such fallacious reaction as the decoloration of permanganate. No doubt the permanganate processes of assaying spirit of nitrous ether are capable of giving useful comparative results in the case of samples of good quality, but when applied to inferior samples, or to specimens containing much aldehyde (such as the London Pharmacopœia preparation), the indications are utterly worthless and misleading, and the results should on no account be expressed in terms of nitrous ether.*

The well-known process of Professor J. F. Eykman for assaying spirit of nitrous ether is practically a quantitative application of the iron reaction, but instead of relying on the depth of the brown coloration, the nitric oxide gas evolved is collected and measured. Eykman's process has given excellent results in the hands of Messrs. P. MacEwan and F. S. Dymond, and Mr. D. B. Dott has confirmed the general accuracy of the process, and has found

*A sample of sweet spirit of nitre, which gave only faint indications of nitrous compounds when independently examined by the iron test by four different chemists, was reported by another chemist to contain 1.3 per cent of nitrous ether, as the result of an analysis by Muter's modification of the permanganate process.

the results very constant even when the conditions of the experiment are varied. Their reports have been confirmed in the main by an extensive experience of its capabilities in my own laboratory, where the accuracy of the process has been fully verified when a known quantity of pure sodium nitrite (made from silver nitrite) is employed. With solution of ethyl nitrite several sources of error exist, which tend to cause the method to give results somewhat below the truth. The chief cause of error is probably incomplete reaction, but the solubility of nitric oxide in aqueous liquids also affects the results. The loss from the latter cause is reduced to a minimum if a nitrometer be employed instead of the gas being caused to bubble up through a solution of soda. Probably still closer results might be obtained by saturating the soda solution with common salt.

Although up to the present time, Eykman's process has been rightly regarded that furnishing the nearest approach as to accuracy in the assay of spirit of nitrous ether, and kindred preparations for ethyl nitrite, I believe the following method will practically replace it in the future. It suggested itself to me when attempting to estimate ethyl nitrite by the process of Mr. D. B. Dott (*Pharmaceutical Journal* [3], xv., 200, 492, 592) which consists in treating the sample with an acidulated solution of potassium iodide, and estimating the nitrous compounds from the amount of iodine liberated, as ascertained by titration with decinormal solution of sodium thiosulphate. It is evident that the ethyl nitrite may be estimated either from the amount of iodine set free or from the volume of nitric oxide gas evolved in the reaction, the former being Dott's method, and the latter the one to which I now desire to call attention. The assay might no doubt be made in an apparatus similar to that employed by Eykman, but I have found the following method of manipulation far more simple and satisfactory in every sense. It is the outcome of a large number of experiments made to test the constancy of the results under different conditions of operating. A nitrometer should be filled with strong brine, and 5 C.c. of the sample to be tested should then be placed in the cup of the nitrometer, and allowed to enter through the tap, taking care that no air gets in at the same time. Five C.c. of a strong solution of potassium iodide is next allowed to enter, and this is followed by about 5 C.c. of dilute sulphuric acid. Effervescence immediately ensues, and, if the tube be vigorously agitated at intervals* the reaction is complete in five minutes, when the level of the liquid in the two limbs of the nitrometer is adjusted and the volume of nitric oxide gas read off. If the volume of gas evolved be small, another 5 C.c. of the sample should be let into the nitrometer, and the agitation repeated. The calculation is the same as in Eykman's process, the reaction being:

$(C_2H_5)_2NO + KI + H_2SO_4 = (C_2H_5)_2OH + KHSO_4 + I + NO$
Thus, 75 parts by weight of ethyl nitrite evolve 30 of nitric oxide gas.

(To be continued.)

SINCE its establishment in 1882, the Tokio University (in Japan) has graduated 178 students in pharmacy, and has, at present, a class of 89.

By a new law in Arkansas no saloon can be built within 640 rods of a church. But the natives dodge this law by building the saloon first. Then they erect the church right across the road.

* This should be effected by holding the tapped tube vertically, and agitating the contents by a transverse motion. In this way the reaction is readily confined to the upper part of the liquid in the closed side of the nitrometer.

Detection of Phenol in Creasote.*

In the *Chemical News* of May 2d, 1884, there appeared the following note among the weekly "Chemical Notices from Foreign Sources," the source in this instance being *Zeitschrift für Analytische Chemie*:

"A Sensitive Reaction of Phenol J.) F. Eykman).—A very dilute solution of phenol mixed with a few drops of nitrous ether, and the same volume of undilute sulphuric acid, takes a red color. If the acid is allowed to run down the side of the glass so as to form a layer below the phenol solution, there appears a narrow red band where the liquids meet. This reaction indicates one in two millions."

On trying the test with a five per cent solution of pure nitrous ether, and one per cent and one per mill solutions of phenol, I obtained a triple ring, the intermediate stratum being brown, the lower a bright emerald green, and the upper, pink. This not being satisfactory, I referred to the "foreign source," and found that Eykman's paper had appeared in *NEW REMEDIES* [1882, p. 340], and that *spirit of nitrous ether* was to be used in the test. With the spirit the emerald green color is not produced; the ring is at first brown with a red shade, but after standing for a short time, the brown color disappears, leaving a fine pink stratum, and the strong acid has also a pink shade. On mixing the two liquids, an opaque solution of a red shade (approaching magenta) is produced. The pure nitrous ether solution is quite clear, and of a darker red color. The red color is due to reaction between phenol-sulphonic acid and the aldehyde contained in the sweet spirits of nitre.†

The reaction is a mere test-tube experiment, is pretty and interesting, particularly when a solution of pure nitrous ether is used; the immediate bright green color, and the gradual development of the red, owing to the slow forming of aldehyde, are very interesting. Apart from this, it struck me that the reaction might be practically useful in the detection of phenol in creasote, and I put the matter on trial.

An aqueous solution of creasote (1 in 500) on the addition of spirit of nitrous ether becomes cloudy and colored (phenol solution remains transparent and colorless), and when the sulphuric acid is added, a dark brown ring is formed between the layers. After cooling, the layers are mixed, and a brown solution with a brown froth is formed.

The following results were also obtained:

Creasote containing 10 per cent of phenol. Dark brown ring, brown above, acid acquired pink tinge. On mixing, dark brown solution, and froth of red shade.

Creasote containing 20 per cent of phenol. Dark brown ring, brown above, acid acquired pink color. On mixing, red-brown solution, and froth of red shade.

Creasote and phenol, equal parts. Red-brown ring above, and pink below. On mixing, pink brown solution and pink froth. (This mixture gives results which nearly approach to those with pure phenol.)

If the solutions of pure creasote and those containing ten and twenty of the adulterant be allowed to stand for half an hour or longer after mixing, again shaken, and allowed to rest for a few minutes, the pure creasote froth is found to be white, while the others are distinctly red tinted.

From these results I consider the application of Eykman's test to the detec-

tion of phenol in creasote as practicable, the reagents required are common things, and the application of the test quite easy. Although I have made parallel experiments with solution of pure nitrous ether, the results obtained were not much different from those with spirit of nitrous ether. The strength of the creasote solution should be about 1 in 500—a single drop dissolved in an ounce of water will serve. In applying the test, five drops of spt. æther. nitr. are first placed in a test-tube (5 inches by $\frac{1}{4}$ inch diameter is the best size to permit shaking), then a drachm of the creasote solution, and lastly, the same volume of strong sulphuric acid carefully poured down the side of the tube. There are first to be noted the color of the ring and any change produced in the acid; if it be pink, phenol is present. Then after the contents of the tube are quite cold, the layers should be mixed and the color of the froth noted, which will corroborate the first observation. Further if the contents of the tube remain undisturbed until the flocculence rises to the surface, the clear liquid in the case of pure creasote is of a pale brown color, but when phenol is present to the extent of ten or twenty per cent, it is a dark red, or reddish-brown.—*Pharm. Journ.*, March 14th.

CORRESPONDENCE.

DEAR SIR:—I have read with much interest the two serious mistakes in dispensing which were reported in the *AMERICAN DRUGGIST*, No. 131, and I beg your pardon for troubling you with a few observations on the first of them. It is evident that the only interpretation to be given to "1.5 milligrammes" was: "One milligramme and a half." But as it is not a usual manner of writing, it happens that sometimes it is not well interpreted. I think that the best way for obviating such dangerous mistakes should be that of employing the letters instead of the figures. We never write in Italy: "R Atropini sulfurici 0.0015 grammes," but: "R Atropini sulfurici one milligramme and a half." I think that in this manner the adoption of the decimal system would present by far less difficulties than those presented by adopting figures in writing prescriptions. I beg your pardon for the trouble, and present to you my best compliments and kind regards.

Most obediently and faithfully yours,

CHARLES RUATA,
Prof. of Materia Medica at the University.

PERUGIA, May 24th, 1885.

To the Editor *American Druggist*.

SIR:—Some time ago, a Mr. White, herbalist, of Leeds, sought to register as his trade mark the words *Essence of Composition*; a short letter in one of the trade journals was sufficient to draw the attention of the chemists and druggists to this matter, with the result that fourteen makers of *Composition Essence* lodged their oppositions at the Patent Office, Southampton Buildings, Chancery lane, London, England.

Mr. White now seeks to register the words "Cherry Balsam" as his sole property. As this matter is important to the trade generally, and especially to those who manufacture preparations of *Prunus virginiana*, perhaps you would kindly publish this letter.

I am, sir, yours truly,

J. P. DOWLING.

11 YORK ROAD, BATTERSEA,
LONDON, ENGL., May 27th, 1885.

THE safety-pin, in one form or another, dates back about ten centuries before the Christian era

* By Peter MacEwan. Read at a meeting of the Edinburgh Chemists' Assistants and Apprentices Assoc., Jan. 28th.

† See Paper by Mr. Dunstan *Pharm., Journ.* [3], xiv., 237.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,523.—Gold Paint, Gilding and Bronzing (J. Bros., York, Neb.).

In addition to what we have said in our last number, we can give some further hints regarding this subject, on the authority of the *Industrie-Blätter*. A very fine coat of gilding may be applied to plaster, etc., by rubbing the refuse of gold-beater's work with honey, by means of a muller. The substance to be gilt is first coated with linseed oil, and the metallic paste then applied with a rag.

No. 1,524.—Removing Vegetable Coloring Matter from Alcohol.

In addition to the answer we printed in reply to this query in our last number (page 119), one of our subscribers favors us with a note suggesting that the coloring matter may be bleached out by exposing the alcohol to sunlight.

No. 1,525.—Pancreatized Milk (M. S.).

The best method of pancreatizing milk for small children is probably the following:

Extract of Pancreas..... 5 grs.
Bicarbonate of Sodium... 15 "
Sugar of Milk..... 200 "

Dissolve the powder in $\frac{1}{2}$ pint of cold water, and add $\frac{1}{2}$ pint of milk. Allow the mixture to stand in warm water at about 100° F. for fifteen minutes; then remove it to a cold place. It should not be so far pancreatized as to have a bitter taste.

The above compound powder is best prepared in quantity, and a suitable measure furnished to customer, just large enough to hold the amount requisite for one lot of milk.

No. 1,526.—Detection of Opium in Tobacco (C. A. P.).

We have on several occasions examined certain kinds of smoking tobacco and also cigarettes for opium, but have at no time discovered any. In order to assure ourselves of the correctness of our method of assay, we have also experimented with known mixtures of tobacco and opium, which latter we were always able to detect. The method we used was as follows:

Treat the tobacco with cold water so as to exhaust it, evaporate the liquid at a low temperature, while stirring, to a small bulk, and filter. Then add carbonate of sodium solution to the liquid as long as it produces a precipitate. If it does not do so at once, let the whole stand at rest for twenty-four hours. Then remove the precipitate, dissolve it in very dilute hydrochloric acid, mix this with an equal volume of alcohol, and add to it water of ammonia (likewise diluted with its own volume of alcohol) to distinct, but not excessive alkaline reaction. Cover the vessel, and set it aside for twelve or twenty-four hours. Then examine any crystalline deposit for morphine by the usual reactions of identity. The crystals, or apparently amorphous, semi-crystalline film (if only traces are present), may be purified by a repetition of the process.

No. 1,527.—Coloring Celluloid (C. K.).

The inquirer informs us that he is often called upon to color celluloid billiard balls, and that he has used all the aniline colors he could think of, but never obtained a permanent color. He desires to know a method by which he can accomplish the object.

Aniline colors cannot be expected to be permanent under any circumstances. Ivory billiard balls are usually dyed by permanent or fast colors, and we presume that celluloid balls can be treated in the same manner. The following are the processes usually employed:

1. *Black.* The balls are first soaked in an alkaline lye or in weak water of ammonia, then in a dilute solution of nitrate of silver, exposed to the light and dried.

2. *Blue.* Steep the balls in the dyer's green indigo vat. Or dip them into a weak solution of sulphate of indigo, which has been nearly neutralized with carbonate of potassium or potash. Or dip into a solution of soluble Prussian blue. Or into a dilute solution of ferric chloride, allow to dry, and then into a dilute solution of ferrocyanide of potassium.

3. *Green.* Steep them in a solution of two parts of acetate of copper and one part of chloride of ammonium.

4. *Purple.* Dip them in a weak, neutral solution of chloride of gold, and afterwards expose them to the light.

5. *Red.* Infuse cochineal with water of ammonia. Soak the balls for a few minutes in water slightly acidulated with nitric acid. Then dip them in the cochineal infusion.

6. *Yellow.* First soak them for some hours in a solution of nitrate or acetate of lead, and afterwards in a solution of chromate (not bichromate) of potassium.

7. *Brown.* Use the same method as for black, but have the silver solution more dilute.

8. *Brown.* Steep the balls for several hours in a solution of permanganate of potassium, rendered strongly alkaline with soda. The tint may be regulated by the quantity of permanganate.

No. 1,528.—Cream of Roses (J. H.).

This is also called *Milk of Roses*, and is used as a toilet article. Piesse gives the following formula:

Sweet Almonds (blanched)... $\frac{1}{2}$ pound
Rose Water... .. 1 quart
Alcohol (91°)... .. $\frac{1}{2}$ pint
Oil of Rose... .. 1 drachm
White Wax, Spermaceti,
White Castile Soap, each... .. $\frac{1}{2}$ oz.

Shave the soap and place it in a vessel which can be heated by steam or a water-bath; add to it 2 or 3 oz. of rose water. When the soap is perfectly melted, add the wax and spermaceti, and stir occasionally. While this is going on, blanch the almonds, carefully excluding every damaged particle. Then beat them up in a scrupulously clean mortar, and allow the rose-water to trickle into the mass by degrees. When the emulsion of almonds is finished, strain it *without pressure* through clean-washed muslin. The previously prepared saponaceous mixture is now put in the mortar, and the ready-formed emulsion carefully and gradually blended with it. As the last of the emulsion is run into the mortar, the alcohol, in which the oil of rose has been dissolved, is made to follow it and mixed very gradually with the other ingredients. A too sudden addition of the alcohol frequently coagulates the milk and causes it to be curdled. As it is, the temperature of the mixture rises, and every means must be taken to keep it down. Finally strain the product.

The almond residue may be washed

with a few ounces of fresh rose-water, to prevent any loss in bulk in the whole quantity. The newly formed milk should be allowed to stand at rest for 24 hours, when the clear portion may be drawn off the sediment, and is ready for bottling.

No. 1,529.—Whitening Shoe Soles (Subscriber, Milwaukee).

This correspondent wants to know how shoe soles may be whitened without using oxalic acid, which is usually recommended for this purpose.

We believe it may be done by means of caustic lime or by lime-water. But we would prefer to have the question answered by some of our readers who may have some practical experience in this direction.

No. 1,530.—Bleaching Sponges (W. W.).

This correspondent says he has tried the hyposulphite process, but it has failed in his hands. He does not give any details of the process, as carried out by him, but we presume he used the hyposulphite in conjunction with hydrochloric or some other mineral acid, which causes an evolution of sulphurous acid gas, and a separation of free sulphur, the gas acting as a bleaching agent.

Sponges having a red core cannot be thoroughly bleached by this method, except by protracted contact, which would eventually injure the texture of the sponge.

The best method of bleaching sponges was published in *NEW REM.*, 1883, 214, and is as follows:

Soak the sponges, previously deprived of sand and dirt by beating and washing, in a one per-cent solution of permanganate of potassium. Then remove them, wash them thoroughly in water (they have a dirty brown color which water cannot wash off) and press out the water. Next put them into a solution of $\frac{1}{4}$ pound of hyposulphite of sodium in 1 gallon of water, to which 1 ounce of oxalic acid (or of hydrochloric acid) has been added just previously to the moment when the sponges are introduced. Leave them in the solution for 15 minutes, then take them out and wash them thoroughly.

Bromine water may also be used for bleaching sponges.

No. 1,531.—Triple Extracts (J. D. H.).

These are alcoholic solutions of the odorous principles of so-called *pot-mades*, that is, pure fats or oils impregnated with the odor of certain odoriferous flowers, herbs, etc. Sometimes mere alcoholic solutions of certain essential oils are likewise called by that name. The "triple extracts" are prepared by macerating the *potmade*, previously cut into small pieces with a certain quantity of alcohol (about one pint for each pound), and macerating them, cold, for a considerable time (4 to 6 weeks, or longer). In some cases, moderate heat may be used to hasten solution; but this is risky, as it may impair the delicate flavor of the product. If the maceration can be conducted in an apparatus where the fat and alcohol, while in contact, are continuously agitated, the exhaustion of the odorous principle will be much more speedy and complete.

After the first concentrated essence (extrait triple) has been poured off, a second and sometimes a third maceration will still extract some of the perfume. These may either be used for inferior or cheaper preparations, or may be used in place of pure alcohol for extracting fresh *potmades*.

The name *triple extract* (extrait triple) is, properly speaking, applied to such essences as have been prepared by triple maceration. For instance, two parts of cologne spirits are macerated with one part of a *potmade* or

perfumed oil, and then decanted. The liquid is again macerated with half of its weight of the perfumed fat, and when the liquid is poured off the process once more repeated. At present, it is quite customary to apply this term to macerates which are prepared in the ratio of one pint to one pound.

No. 1,532.—**Works on Perfumery** (J. D. H.).

We can recommend among the large number published, the following:

G. W. S. Piesse, "The Art of Perfumery." 8vo. London, 1879.

R. S. Cristiani, "Perfumery and Kindred Arts." 8vo. Philadelphia, 1877.

G. W. Askinson, "Die Parfümerie-Fabrikation." 8vo. Wien, 1883.

H. Hirzel, "Die Toiletten-Chemie." 8vo. Leipzig, 1874.

A. B. Lunel, "Guide pratique du Parfumeur." 8vo. Paris (n. d.).

No. 1,533.—**Sea-Foam** (C. A. B.).

This correspondent asks for the formula of a "sea-foam" (not Sea-Foam baking powder) which will produce a quick and heavy foam.

A very effective preparation of this kind is made from gum arabic and soap-bark. The exact composition of the "sea-foam" we are, however, unaware of. Perhaps some of our readers can supply the information.

No. 1,534.—**Compound Tincture of Jalap** (J. E.).

This is not official in the British, but in the French Pharmacopœia. The formula is as follows:

	Gm.
Jalap.....	80
Turpeth Root (from Ipomœa Turpethum).....	10
Aleppo Scammony.....	20
Alcohol, 60%.....	.960

Macerate the comminuted drugs for ten days in a well-closed vessel occasionally stirring. Then filter.

No. 1,535.—**Wizard Oil** (C. A. B.).

On page 60 of our last volume, we quoted a formula from the *Indiana Pharmacist*, which is said to yield a product resembling the above. It is as follows:

Oil of Cloves.....	2 drachms.
Water of Ammonia..	4 "
Ether.....	4 "
Oil Turpentine.....	4 "
Chloroform.....	1 "
Camphor.....	2 "
Oil of Sassafras.....	8 "
Alcohol, enough to make.....	1 pint.

Pine Odor Essence.

("Coniferengeist.")

	Parts.
Oil of Pine (needles, essent.)..	80
" " Juniper berries.....	10
" " Rosemary, best.....	5
" " Lavender.....	3
" " Lemon.....	2
Alcohol.....	.900

Mix, filter, and preserve in the dark. The pine odor is generated by filling an atomizer with water, adding a little of the essence, and spraying it about.—EUGEN DIETRICH in *Pharm. Centralh.*

BIBLIOGRAPHY.

URINARY AND RENAL DERANGEMENTS AND CALCULOUS DISORDERS. Hints on Diagnosis and Treatment. By LIONEL S. BEALE, M.D., etc. Philadelphia: P. Blakiston, Son & Co., 1885, pp. 356, 8vo. \$1.75.

THIS is a work of remarkable interest and value for the general practitioner. Its author has already become well-known for his knowledge of the sub-



"No, mum, you didn't have no umbrella here. Yer must hev drapped it somewhere."—*Bazar.*

ject, and his ability to make his writings interesting. While glancing over the pages with a view to having something of the general character of the contents, we have been impressed with the familiarity of the writer with facts which too often escape the observation of most practitioners who treat this class of affections, and by the wisdom with which their treatment is advised. It is decidedly a helpful book, and one which should be thoroughly studied.

TEN DAYS IN THE LABORATORY WITH DR. ROBERT KOCH, OF BERLIN. The Methods to be Employed in the Cultivation and Detection of the Comma Bacillus of Asiatic Cholera. By GEO. W. LEWIS, JR., A.B. Buffalo: 1885, pp. 15, 8vo.

At the present time, when so much attention is given to this subject, this extract from the *Buffalo Medical and Surgical Journal* will be a very acceptable addition to the literature of cholera.

INSOMNIA, AND OTHER DISORDERS OF SLEEP. By HENRY M. LYMAN, A.M., M.D., Professor of Physiology, and of Diseases of the Nervous System, in Rush Medical College, etc. Chicago: W. T. Keener, 1885, pp. 239, 8vo.

THIS is a treatise upon a subject which has received generally less attention than its merits deserve, when we consider how often sleeplessness is a symptom occurring in various maladies, or which alone leads the sufferer to consult a physician. Its contents embraces chapters on the Nature and Cause of Sleep: Insomnia, or Wakefulness; Remedies for Insomnia; Treatment of Insomnia in Particular Diseases; Dreams; Somnambulism, and Hypnotism. It is a good book for summer reading.

OLEATES: An Investigation into their Nature and Action. By JOHN V. SHOEMAKER, A.M., M.D. Philadelphia: F. A. Davis, Att'y, 1885, pp. 121, small 8vo.

THIS is an extended *resumé* of the writings of Dr. Shoemaker on this subject during the past ten years, and will prove of service not only to the dermatologist, but, as well, for the manufacturing pharmacist.

NEW FORMULARIO MAGISTRAL. POR A. BOUCHARDAT. Traducido y aumentado con más de 700 formulas nuevas, españolas y extranjeras por D. JULIAN CASAÑA Y LEONARDO.

[**NEW MAGISTRAL FORMULARY.** BY A. BOUCHARDAT. Translated and augmented by more than 700 new Spanish and foreign formulas, by D. JULIAN CASAÑA Y LEONARDO. Nineteenth Ed. Madrid: Carlos Bailly-Baillière, 1885, pp. 704, small 8vo.]

NOTES ON THE OPIUM HABIT. By ASA P. MEYLER. Second Ed. New York: G. P. Putnam's Sons, 1884, pp. 37.

THIS is an interesting pamphlet by a well-known authority on the nature and treatment of this vice.

TREATISE ON EMBALMING. Including a Full and Concise Description of the Methods to be Employed for the Preservation of the Human Body after Death, by Chemical or other known Processes. Together with a full De-

scription of Chemicals Employed in Europe and the United States by the most Eminent Chemists and Professors; also such Anatomical, Physiological and Chemical Facts as are necessary to be understood, in order that Scientific Manipulations may be Carried out. By M. LESSLY. Toledo, Ohio, 1884, pp. 156, 8vo.

THE MINERAL WATER MAKER'S MANUAL for 1885. London, England: J. Gilbert Smith. Office of the *United Kingdom Mineral Water Trade Review and Guardian*. Pp. 108, 8vo. 3 shillings.

BESIDES the current calendar and numerous useful recipes and items of information, this manual contains a photograph of Henry Cochrane, Esq., Alderman, J. P., and principal of the firm of Cantrell and Cochrane, the well-known British manufacturers of mineral waters. The work is a very creditable example of the enterprise of its publisher.

REPORTS.

Twenty-Eighth Annual Report of the COUNCIL OF THE PHARMACEUTICAL SOCIETY OF AUSTRALIA, with which is incorporated the PHARMACEUTICAL SOCIETY OF VICTORIA, 1885, with List of Members and Honorary Members. Melbourne: 1885, pp. 16, 8vo.—PROCEEDINGS of the Fifth Annual Meeting of the IOWA STATE PHARMACEUTICAL ASSOCIATION, held in Marshalltown, May 27th and 28th, 1884; also constitution By-Laws, Roll of Members, etc. Iowa City: 1884, pp. 160, 8vo.—PROCEEDINGS of the Second Annual Meeting of the MICHIGAN STATE PHARMACEUTICAL ASSOCIATION, held at Detroit, September 9th, 10th, and 11th, 1884; also the Constitution, By-Laws, Roll of Members, etc. Muskegon: 1884, pp. 327, 8vo.

American Druggist

Vol. XIV. No. 8.

NEW YORK, AUGUST, 1885.

Whole No. 134.

[ORIGINAL COMMUNICATION.]

PHOTOGRAPHY AS APPLIED TO THE STUDY OF BOTANY.

BY LAURENCE JOHNSON, A.M., M.D.,

Professor of Medical Botany in the Medical Department of the University of the City of New York.

PROCESS OF MAKING PHOTOGRAPHS.

(Continued from page 102.)



SUCH apparatus as was described in the preceding article is, of course, designed for photographing by the dry-plate process.

The dry plates in common use are plates of glass, coated on the side designed to be exposed to light in the camera, with a thin layer of gelatin impregnated with certain salts of silver. They are manufactured in various sizes, and are put up in packages of one dozen each, securely protected from light.

We will now suppose the student provided with all necessary apparatus, including a package of dry plates, and that he is desirous of making his first attempt at photographing.

First of all, one or two plates must be transferred from the box in which they are packed, into the plate-holder, and as this must be done by ruby light—the least ray of white light ruining the plate—a dark-room must be provided.

Any small room or closet will do, but care must be taken that it is absolutely light tight. Key-holes, cracks, and crevices must be stopped so that not a suspicion of light can enter. If the room have a window, this can be covered with two or three thicknesses of red paper, and thus rendered safe.



FIG. 15.—Dust brush.

Should the student have no such room at his disposal, he can fill the plate-holder at night in almost any room, taking care, of course, to exclude all white light by closing the shutters and drawing the shades.

In handling the plates, avoid touching the side coated with gelatin with the fingers, but brush it carefully with the flat brush figured above (Fig. 15), and place it in the holder with this side outward. It is a good plan also to dust the holder before inserting plates, since every particle of dust which by any chance rests upon the gelatinized surface of the plate at the instant of exposure will cause an imperfection in the finished negative.

Having filled the holder, secure the remaining plates of the package against exposure to light before opening the door of the dark-room, else you will repeat my own experience and use plates thoughtlessly spoiled by neglecting this precaution.

Having chosen the object to be photographed, see that it is in a good light. If the operation is conducted out-of-doors, there is generally little difficulty, for if the illumination be unsatisfactory at one hour of the day, at another it may be all that is desired.

As a rule the camera should not be pointed toward the direction from which the light emanates but the reverse, or, better still, in such a manner as to have the light on one side of the object. Arranged in this way the shadows will act to the best advantage in giving the necessary relief to the object.

See that the camera is as nearly level as possible, having due regard to the shape of the object, and that the lens is is about opposite the central point of interest, for this

will insure the proper placing of the picture on the plate, and prevent distortion where it is most to be dreaded.

Now remove the cap from the lens, throw the focussing-cloth over your head and the back part of the camera in order to shut out the light as much as possible, and thus enable you to see distinctly the image upon the ground-glass. Then, with the finger upon the binding-screw, draw out the back part of the camera until the image of the object is sharply focussed on the glass. This will bother you some at first, partly because you see everything in a reversed position, but a little practice will overcome the difficulty. A small magnifying glass, such as is used in botanical analyses, is a very convenient aid in determining the sharpness of focus, for with it you can go over the ground-glass in detail, examining features too minute to be seen distinctly with the unassisted eye.

You must remember, however, that all parts of the object cannot be exactly in focus at the same time, hence you should focus upon the point of greatest interest, being assured that the less important features will be near enough the focus for all practical purposes.

Having finished your examination of the ground-glass, tighten the binding-screw, recap the lens, remove the ground-glass frame, and insert the plate-holder. Then draw out the slide in front of the plate, being careful to do so with as little jarring of the tripod as possible, remove the cap from the lens, count the number of seconds you have decided upon as a proper exposure, recap the lens, insert the slide in the plate-holder, and you are ready for the next step in the process of picture-making.

Remember always that everything depends upon the

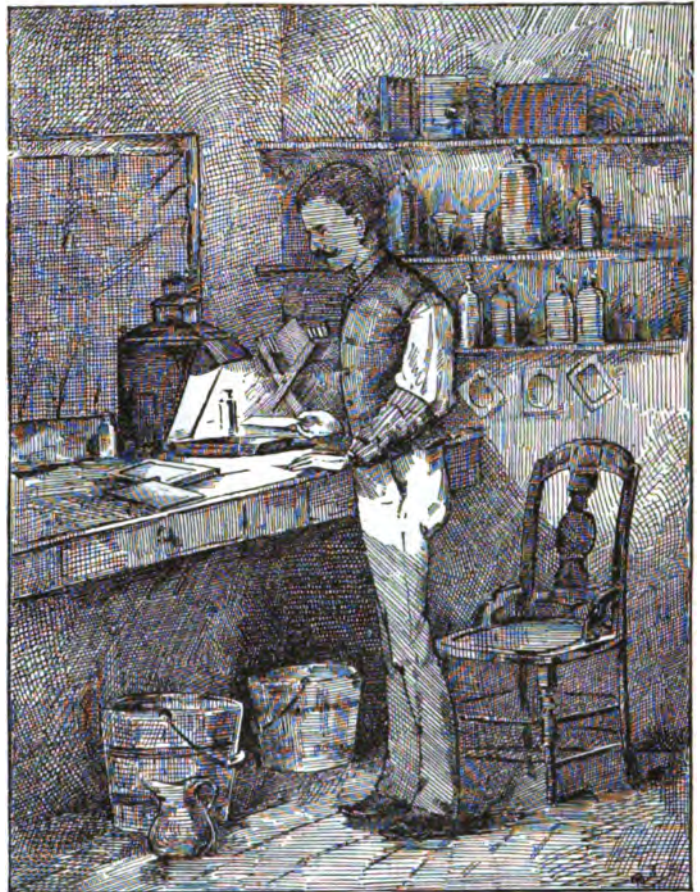


FIG. 16.—Developing a plate in the dark room.

care with which you make the exposure, hence do nothing hurriedly, but consider well every movement before executing it. I have myself frequently made miserable failures through unnecessary excitement in such ridiculous ways as by forgetting to uncap the lens after drawing the slide, thus not exposing the plate at all, or by drawing the wrong slide and thus spoiling a plate altogether. Another point worth remembering is, immediately after exposing a plate and pushing in the slide, make a memorandum of the exposure on the front silicated surface of the slide, else you will be quite likely to forget which plate in a double plate-holder has been exposed, and will only discover it when you develop the plates, and find one of them bearing the confused outlines of two pictures, while the other remains blank.

Regarding the duration of time required for a proper exposure, it may be said at once that there is no definite rule. Different lenses require different exposures, as do also different plates, so that the student must experiment for himself.

At first it is safest to use slow-acting plates, whatever lens may be employed. Again, very much depends upon the light. If the operation be conducted in bright sunlight, the exposure would manifestly be much shorter than if done under a cloudy sky, and much shorter too in the middle of the day than towards evening, when the light is much less intense; much shorter also when the lens is used with a full aperture than when a small diaphragm is employed; and, finally, the duration of exposure is much shorter out of doors than in a room with a side light.

I repeat, then, that the student must experiment for himself; but in the absence of some standard, how shall he be able to experiment intelligently? The answer to this question will appear in the description of the next step.

DEVELOPMENT OF THE PLATE.

Let the first plate be exposed in a good light, say, five seconds, and when it is developed we shall be able to determine any errors in the duration of exposure, and hence will know how to prevent future ones.

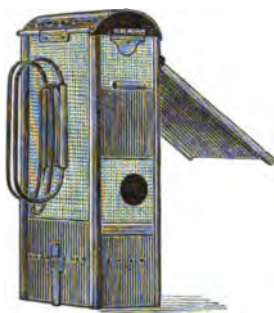


FIG. 17.—Small developing lantern.



FIG. 18.—Drying rack.



FIG. 19.—Developing pan.

The exposure of a gelatin plate to light in the camera makes no sensible change in its appearance; the picture is only rendered visible through the agency of certain chemicals, whose mode of application will next be described.

Manufacturers generally send with each package of plates a formula for the preparation of developing solutions to be used with them, and commonly also specific directions for their application. However much these solutions may differ from each other in matters of detail, they may be readily divided into two classes; namely, those employing pyrogalllic acid as their most essential ingredient—"pyro developers"—and those which use iron instead of pyrogalllic acid—"iron developers."

As the former are at present employed almost universally, we will make use of one in our first experiment.

Dissolve $\frac{1}{2}$ ounce of pyrogalllic acid in 4 ounces of alcohol; label the bottle No. 1.

Dissolve 70 grains of bromide of ammonium in 6 ounces of water and add one ounce each of glycerin and of

stronger water of ammonia; label this No. 2.

Dissolve 1 ounce of bromide of ammonium in 4 ounces of water; label this No. 3.

I copied this from the formula accompanying a package of plates, and, from considerable experience, can confidently recommend it. In well stoppered bottles, the solutions keep without change for a long time.

In addition to the above, there are required also a solution of hyposulphite of soda—one part of the salt in four of water is about right—and a saturated solution of alum.

With these solutions at hand in the dark-room, together with a pitcher of water and a vessel for slops, we are ready to light the ruby lantern, close the door and develop the plate.

To eight ounces of water add two drachms each of No. 1 and No. 2, and mix by gentle agitation. Pour half of it into one of the developing pans, which for surety should be marked A, and the remainder into another pan marked B, and to the latter add fifteen minims of No. 3.

Now take the exposed plate from the holder, and lay it by a careful but quick movement into pan A, in such a manner that the solution may flow



FIG. 20.—Positive.



FIG. 21.—Negative.

rapidly over its upper (exposed) surface, detaching any air-bubbles with the finger or by rocking the pan from side to side. After the lapse of a few seconds, or possibly a minute or two, during which you gently rock the pan from side to side, so as to keep the solution slowly moving, you will observe that the gelatin begins to lose its whiteness here and there. Very soon the dark spots begin to assume definite forms, and then you can distinguish many of the details of your picture. You will note also that these details are the reverse of natural. If, for instance, the view have a bit of sky in it, this shows black, while the places of shadows in trees standing in the foreground are occupied by broad patches of unchanged white gelatin. But supposing these changes have taken place too rapidly for accurate observation, in other words, that the details of the picture have appeared very quickly, flashing as it were over the plate; lift the plate instantly out of pan A and place it in B, by which means the rapid action will be changed to a slow and gradual one. The details already present will become more distinct, and others still will slowly appear. After a time, however, all detail seems about to disappear; the whole plate grows gray, and the picture sinks away, so that you can scarcely distinguish anything. Now

lift the plate out of the pan, and hold it up toward the lantern, and you will see the picture in all its details, ready for the next step. Wash it in plain water, lay it in a pan marked *Hypo*, and cover it with the solution of hyposulphite of soda. Here it must remain a few minutes to dissolve out all the unchanged silver in the gelatin; this is called *fixing* the plate. You can tell when the fixing is completed by examining the back of the plate. When first placed in the solution, this (the back) is milky white but this appearance is gradually lost, and in a few minutes it becomes perfectly clear. Then remove it from the hyposulphite, and without rinsing, immerse it for a minute or two in the alum solution; this hardens the film, and prevents injury during the washing, which the plate is next subjected to, after which it should be placed on edge in the negative rack to dry. If the washing be done in running water, only a few minutes are required, but if this is impracticable, soak it for half an hour or so with frequent changes of the water. All the hyposulphite must be washed out of the film, else it will ruin the negative.

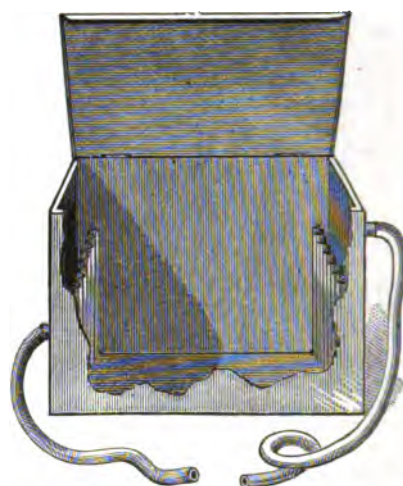


FIG. 22.—Washing box.

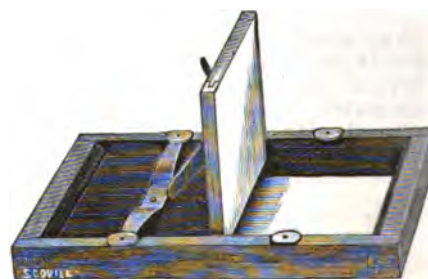


FIG. 23.—Printing frame.

The two pans of developing solution used in this process, as the reader has doubtless observed, are prepared in order to have the operator armed against the effects of over-exposure. The plate is placed in pan A, and if the image appears too quickly, it is transferred to B, which contains more bromide of ammonium, and exerts a restraining influence.

Now, if a plate is suspected of over-exposure, the plan of procedure may be reversed by placing it at once in B, and then if the details appear too slowly, it can be removed to A. If, when placed in B, the picture appears still too quickly, more of No. 3—say five or ten drops—may be added. The terms "too slowly" and "too quickly" are of somewhat arbitrary significance, but their relative meanings can be acquired by a little experience.

Though I have used at one time or another several other pyro developers, I have as yet found none quite as satisfactory as this. It is equally applicable to instantaneous exposures and to those of prolonged duration.

Regarding iron developers, I shall say nothing, save only that I have

discarded them entirely, satisfied that pyro is much preferable.

As already indicated, the rapidity or slowness with which the picture appears when the plate is in the developing solution, decides sufficiently well whether it has been exposed too long or not. If the time has been excessively long, in spite of the restraining influence of the solution in pan B, the plate quickly darkens all over, the details being merged into a cloud which overspreads everything. In this case, rinse it quickly, and place it in the hypo at once, though it is hardly worth the trouble, for 'tis spoiled, and you must try again. On the other hand, if the image appears very slowly indeed in pan A, the details coming out but imperfectly, you will find the finished negative presenting strong contrasts of light and shadow, but an almost total absence of half-tints, upon which often the beauty of the picture greatly depends. Such a plate has not received sufficient exposure.

In developing plates in hot weather, it is best to employ ice water to avoid what is termed frilling, that is, a softening and expansion of the gelatin film by which it is raised from the glass along the margins into little rolls or frills. Should this accident happen at any stage of the development, rinse the plate immediately, and immerse it in the alum solution for a minute or two, then wash it, and proceed with the development from the point at which you left off. The plates of some manufacturers are much more liable to frill than those of others, and on this account are less desirable, especially in hot weather. If you happen to get a package which shows this tendency, it will be safer to place the plate in the alum solution before fixing with hypo rather than afterwards, as is the ordinary way.

Finally, I feel that I cannot err in insisting upon the carefullest attention to every detail in the development of plates. By keeping separate pans for each individual solution, and for this alone, marking them accordingly, and by washing all utensils immediately after finishing your work with them, you will avoid serious difficulties, and be reasonably sure of satisfactory results.

Thus much for the development of the plate, which is now termed a *negative*; that is, a plate in which the lights and shadows are the reverse of those of the object toward which the camera was pointed. We have next to print a positive on paper in which the object shall appear with natural relations of light and shade. These relations are shown in the accompanying illustrations, Fig. 21 showing a negative, and Fig. 20 a positive.

PRINTING.

If you are content with half doing a thing, you may purchase paper for printing ready for use; if, on the other hand, you wish to get the best results attainable, at whatever pains-taking cost, you will purchase albumenized paper only, and sensitize it as you require. Sensitized paper, as furnished by manufacturers, does not keep well, and I could never get wholly satisfactory prints from it.

Albumenized paper occurs in sheets, 18 by 22 inches, and may be had of any dealer in photographic materials at small cost. It is prepared for use in the following manner:

Make a solution of nitrate of silver, fifty grains to the ounce, in distilled water; or, if this be inaccessible, water that has been boiled and filtered, will answer nearly or quite as well. Pour the solution into a flat glass, porcelain, or agate-ware tray of suitable size, in such quantity that the bottom may be covered to the depth of at least an eighth or a quarter of an inch. Now take the paper by opposite corners and lay its albumenized side lightly

on the surface of the liquid, being careful to avoid imprisoning air-bubbles. If the edges tend to curl upward, blow against them softly. In a few seconds, carefully raise one corner after another, to see whether there are any bubbles; and if so, break them by blowing against them. Let the paper rest upon the solution a minute and a half, then raise it slowly by one corner, drawing it, as you do so, over a clean glass-rod held in the other hand, in order to clear off, as much as possible, the liquid adhering to its surface. Lay it now in a sheet of blotting-paper, folded through middle and kept for this purpose, and quickly press it all over, then hang it up to dry in a dark place. As soon as it is dry enough, say in fifteen minutes, put it in a close box containing a saucer, into which you have poured two or three drachms of strong aqua ammoniac. Leave it there fifteen or twenty minutes, and it will be ready for use.

As you will probably require but little paper at one time, it is best to cut the sheets into quarters, and make arrangements for sensitizing accordingly. Procuring a tray of the proper size to receive a quarter-sheet—I employ an agate-ware pan purchased at a house-furnishing store—and as much solution as can be made with three or four ounces of nitrate of silver, you will be equipped for a long time. When the bath shows signs of exhaustion, as evidenced by producing weak prints, add more silver. Always filter the solution into the pan before using, and filter it back into the bottle afterwards. Have another bottle containing water for rinsing the pan and filter, and as this gradually becomes charged with silver, it may be employed to dissolve fresh nitrate in, when necessary to replenish the bath.

After the bath has been in use for awhile, it will become discolored, by contamination with organic matter from the paper floated upon it. When this occurs, add five or ten grains of bicarbonate of soda to it, and set the bottle in the sun a few days, until the solution clears.

Having fumed the paper with ammonia, as directed above, cut it into pieces a little larger than the negative with which it is to be used, being careful to protect it meanwhile from bright daylight, which would darken it.

Fit a plate of clear glass in the printing-frame, and upon this lay the negative, back downwards. Then lay a piece of the sensitized paper on the negative, the albumenized side resting upon the gelatin film. Upon this place a thin pad of paper or cloth, then put in the back of the frame, and fix it by adjusting the springs. Place it now in the sunlight, and the printing process begins at once.

In case the negative be not very intense, that is, the dark parts of no great density, as shown by transmitted light, it is better to temper the effect of bright sunshine, by laying a thickness of two of white tissue-paper over the front of the frame, to which it may be fastened with a little paste. But in printing otherwise than in bright sunshine, or in case of very intense negatives, this may be omitted. From time to time, take up the frame, loosen one-half the back, and lift the edge of the paper, to see how the printing is progressing; and when it has reached the required depth in the shadows, remove the paper, and put it in another.

Keep the first print as a proof, and with it as a standard, print the subsequent ones much deeper, for in the process of toning, next to be considered, they will be bleached to a certain extent, and, if not printed stronger than the proof, will come out of the toning-bath weak and unsatisfactory.

After printing as many copies as you desire, lay them, one-by-one, on a plate of glass, and, with a rule and sharp

knife, or the little instrument termed a trimmer, cut them to the required size.

Then place them in a vessel of water in a darkened room, and let them soak for an hour or more, changing the water occasionally, in order to wash out the free silver remaining in them.

TONING PRINTS.

Dissolve one drachm each of acetate and bicarbonate of soda, and half a drachm of common salt in a quart of water. Make this solution the day before it is required for use.

Dissolve fifteen grains of chloride of gold in seven and one-half ounces of water.

Take four ounces of the soda solution and half an ounce of the gold solution, mix and pour into a glass or porcelain tray that has been previously gently warmed. Into this lay the prints, washed as directed above; now turn them over one by one, and carefully watch the effect produced. After awhile you will observe that they begin to change color, the lighter parts growing lighter still, while the shadows become of a deep, rich purplish tint. Let the action go on until the half tones have become grayish, and the shadows almost black, then take them out of the bath and rinse them in water, after which lay them in a solution of hyposulphite of soda—one part of the salt to eight of water—for fifteen minutes. From the hypo solution you will transfer them, without rinsing, to a strong solution of common salt, where they should remain for five minutes; then wash them in running water for an hour or so—all night is better—or if this be impracticable, let them soak in a vessel of water for several hours with occasional changes of the water.

Pour the toning bath back into the bottle containing the soda solution. You can use it for months, adding each time the same proportion of gold as at first.

Lastly, while still damp, brush their backs with smooth starch paste, and fix them to cards or in an album according to your taste.

Another kind of print, a blue sickly-looking thing, is made with paper coated with an iron solution, but I shall not waste time in describing the process. Its only advantage is its ease of manipulation. Any old scrap of silvered paper, even though prepared months before, furnishes a much more satisfactory proof of the negative.

In finishing this part of the subject, I should, perhaps, write a few words concerning the wet-plate process. If you are to make all your exposures at home, this is quite as feasible as the process just described, and, everything considered, a little cheaper. The plate is coated, when required for use, with collodion containing certain bromides in solution, and is then placed for five minutes in a bath of nitrate of silver, forty grains to the ounce, and immediately transferred to the plate holder (specially made for this purpose) and exposed in the camera in the same way as a dry plate, but for about ten times as long. The development is much simpler and quicker than of dry plates, though not essentially different in principle. Printing and toning are, of course, identical.

Having a dry-plate outfit, one can at small expense add wet-plate apparatus to it, and thus be prepared for either, but I would hardly advise it. I did so myself, but in a few months discarded the wet-plate process altogether.

(To be continued.)

Hydrofluorate of Quinine is recommended by Weddel in the treatment of hepatic engorgements of malarial origin. It is soluble in water or alcohol.

EXAMINATION OF COMMERCIAL IODINE.*

BY MARY H. SPENZER, OF CLEVELAND, OHIO.

ELEVEN samples of resublimed iodine of commerce labelled G. Mallinckrodt & Co., Chas. Pfizer, Powers & Weightman, and Billing & Co., were subjected to the following tests:

1. *Appearance.*—Several substances can be detected by this means.

a. Water, by the sticky coherence of the iodine together, or to the side of the bottle.

b. Non-volatile substances, such as coal, black antimony, etc., can be inferred.

c. By the aid of a magnifying glass, minute, colorless needle-shaped crystals of cyanide of iodine can be detected.

2. *Odor.*—Iodine has not a very strong odor, therefore the very disagreeable odor of cyanide of iodine can be observed if present.

3. *Volatilization.*—Pure iodine should completely volatilize, leaving no residue when heated in a test tube; if otherwise, it is adulterated; cyanide of iodine, if present, will be seen sublimed as colorless crystals above the iodine.

4. *Solution in its several solvents.*

a. The solution in water should be of a yellowish-brown color, while if cyanide of iodine is present, the solution is much darker.

b. Ether and water. Pure iodine should make a perfect solution in ether; on the addition of water, if insoluble substances are present they will settle in the water.

c. Chloroform. If the iodine contains much water, the solution will be only translucent.

d. Sulphurous Acid. Pure iodine dissolves completely in sulphurous acid.

5. *Detection of chlorine and bromine.*

a. A sulphurous acid solution is supersaturated with ammonia water, and completely precipitated with nitrate of silver, filtered, and nitric acid added; any cloudiness or precipitate appearing denotes the presence of chlorine or bromine.

b. Boil an aqueous solution until all the iodine is liberated (test with starch), add nitrate of silver, the appearance of a precipitate or cloudiness indicates chlorine or bromine.

6. *Detection of cyanide of iodine.*

a. Cyanide of iodine has a very disagreeable odor.

b. Also by the appearance of colorless prismatic crystals in the iodine or above it when volatilized in a test tube.

c. By adding to a clear, aqueous solution of iodine a solution of caustic potash until decolorized, then a few drops each of solution of ferric chloride and ferrous sulphate and, lastly, hydrochloric acid in slight excess, when the formation, at once or upon standing, of a blue precipitate will prove the presence of cyanide of iodine.

7. *Detection of calcium salts.*

To an aqueous solution of iodine, boiled until all the iodine is liberated, ammonium oxalate and ammonia water are added and allowed to stand twelve hours, when the presence of a precipitate indicates calcium salts.

8. *Estimation of iodine.*

This is done volumetrically by means of a standard solution of hyposulphite of soda, which, after being compared with standard solution of iodine is standardized with pure, dry iodine (made by resubliming pure iodine between two weighed watch glasses) and allowed to cool in a desiccator over sulphuric acid before use; or, if the iodine contains chlorine or bromine, by triturating with one-sixth of

its weight of iodide of potassium, drying in a desiccator, subliming between watch glasses, and resubliming when wanted for use. The iodine equivalent to 1 C.c. of standard hyposulphite of soda is noted. (When making this and subsequent iodide of potassium solutions, it is necessary to use potassium iodide free from iodate.)

About 0.5 gramme of iodine is accurately weighed in a small tube, dissolved in a small flask containing 10 C.c. of 10% solution of potassium iodide; when completely dissolved, standard

Estimation of water.	1.53%	2.89%	0.84%	1.76%	1.00%	2.29%	3.43%	2.57%	2.00%	2.25%	3.20%
Estimation of iodine.	98.454%	97.600%	99.161%	98.310%	98.968%	97.673%	96.585%	97.390%	97.917%	97.722%	96.740%
Calcium salts.	None.....	"	Trace....	"	"	"	"	"	"	"	"
Cyanide of iodine.	None.....	"	"	"	"	"	"	"	"	"	"
Chlorine and bromine.	None.....	"	"	"	"	"	"	"	"	"	"
Solution in acid sulphurous.	Complete.	"	"	"	"	"	"	"	"	"	"
Solution in chloroform.	Complete	"	"	"	"	"	"	"	"	"	"
Solution in ether and water.	Complete.	"	"	"	"	"	"	"	"	"	"
Solution in water.	Yellowish-brown.	"	"	"	"	"	"	"	"	"	"
Volatilization.	Complete	"	"	"	"	Slight residue.	Complete.	Slight residue.	Complete.	"	"
Odor.	Normal..	Acetous.	Normal..	"	Ethereal.	Normal..	"	"	"	Acetous.	"
Appearance.	1. Large crystals, slightly adhesive.....	2. Large, clean crystals, slightly adhesive....	3. Medium clean crystals, slightly adhesive..	4. Large, clean crystals, adhesive.....	5. Small crystals, adhesive in lumps.....	6. Medium crystals, slightly adhesive.....	7. Small, greasy crystals, adhesive in lumps	8. Small crystals, adhesive.....	9. Large crystals, adhesive.....	10. Large crystals, adhesive.....	11. Medium, greasy, adhesive crystals.....

hyposulphite solution is run in from a burette, until completely decolorized, then 3 C.c. of mucilage of starch is added, and the liquid subsequently titrated with standard iodine solution to incipient blueness. The amount of iodine solution used, deducted from the cubic centimeters of hyposulphite used, equals the number of cubic centimeters of hyposulphite required to neutralize the iodine; when multi-

plied by the previously determined factor equals the amount of iodine in the sample examined.

9. *Estimation of water.*

Heat a small porcelain dish with a porcelain or agate pestle on a water bath for half an hour; allow to cool in a desiccator, and weigh; then triturate about 2 grammes of iodine with 2 or 3 times its weight of pure mercury, and adding from time to time small quantities of alcohol until complete union is effected (determined by looks and odor); this is then allowed to dry on a water bath at 212° F.; until, after cooling in a desiccator, the weighings remain constant; when the loss in weight between the iodine and mercury used and the last constant weight equals the amount of water in the original iodine.

It will be seen from the schedule that the iodines examined were quite up to the pharmaceutical standard.

[ORIGINAL COMMUNICATION.]

NAPHTHOL AS AN ANTISEPTIC.

MR. W. J. RIGNEY states that he has recently obtained results with naphthol which would place it among the most efficient antiseptics. The naphthol experimented with was first purified and crystallized, and in this state it is an odorless white powder with a hot peppery taste. To 500 C.c. of beef-tea was added 0.3 Gm. of naphthol and allowed to stand for a period of 30 days, when it was found to have retained its characteristic odor as fresh as when first prepared. A beef lung which had already commenced to putrefy was immersed in a solution containing 1 part of naphthol to 500 parts of water; the solution at first became red owing to the particles of blood which adhered to the lung; it soon grew turbid and finally settled as a dull gray precipitate, leaving the solution clear. The lung was withdrawn, and all smell of putrefaction was found to have been removed, it was then returned to the solution, and after standing some time it was found to have an odor resembling that of beef-tea and has remained thus for four months.

[NOTE.—On naphthol as an antiseptic and disinfectant, see also the article on page 291 of NEW REM. for 1883.—Ed. A. D.]

Cold as an External Remedy in Sciatica.

DR. DEBOVE announces that cold is a prompt remedy in sciatic neuralgia, having succeeded in curing, by means of it, almost instantaneously, the most obstinate cases which had resisted other remedies.

He employs chloride of methyl which, on evaporation, produces a cold of 23° C. (9.5° F.). It is easily managed and not very high in price (about 6 francs per liter in Paris).

[NOTE.—We are not aware that it is kept for sale anywhere in this country. In Europe, it has been used already for many technical and other purposes, and certain manufacturers make a regular business in preparing and shipping it. At ordinary temperatures, chloride of methyl (CH₃Cl) is a gas which can be reduced to a liquid by cold and pressure.—Ed. A. D.]

By means of a siphon containing liquefied chloride of methyl, a very fine jet of the latter is made to play against the skin along the whole extent of the sciatic nerve, from the sacrum to the malleolus. The result, according to Dr. Debove, is almost instantaneous. The operation is but little painful, the shock being much more easily borne than that of the actual cautery. Sometimes a little vesication is produced along the track of the nerve, but never any cauterization.—Mon. Thérap.

* Read before the Ohio State Pharmaceutical Association, May 21st, 1885.

AN IMPROVED ALCOHOL-LAMP AND CONSTANT-LEVEL WATER BATH.

C. REINHARDT has made still further improvements in the alcohol lamps and water-baths previously designed by him (see AM. DRUGG., 1884, 43). The defects inherent in the former construction were, first, the difficulty of moving the apparatus about; second, the fragility of the glass feeding tube, and third, the increased expense when more than one lamp was used.

In many laboratories where illuminating gas is not accessible, or has been displaced by the electric light, the use of alcohol lamps for heating is necessary, and will probably become still more so in the future.

Figs. 1 and 2 represent the side view and ground-plan of the arrangement. The glass globe *a*, of the capacity of about 1 gallon, is closed above with the rubber stopper *b*, and below with a doubly perforated stopper, carrying two tubes, one of which, *g*, is of glass and serves to admit air, while the other, *e*, is of brass and may be partly or entirely closed by means of the stop-cock *f*.

A zinc mantle serves to support the

to be open, then liquid (water or alcohol, as the case may be) will flow through the stop-cock *e* into the cylinder *n*, until the orifice of the tube is covered, but, at the same time, liquid will flow off through *k* in such a stream as may be regulated by the stop-cock.

The height to which the liquid can rise in the water bath or alcohol lamp, therefore, depends on the height of the column of liquid which can collect in the small brass reservoir *n*, and this is regulated by the depth to which the glass tube *p* dips into it.

As stated before, the constant level in the water baths is maintained in the same manner. In Figs. 4, 5, and 6, a is the reservoir, l is the regulating brass reservoir (corresponding to n in Fig. 3), b is an opening through which the reservoir is refilled and which is kept closed with a rubber stopper.

In the special case of the water baths, which is illustrated in Figs. 4, 5, and 6, the water regulated in height by the small reservoir l , flows through k into the water bath W (Fig. 1), where a constant level is maintained.

The reservoir *a*, if intended for a water bath, may be permanently connected at *b* with the system of water-

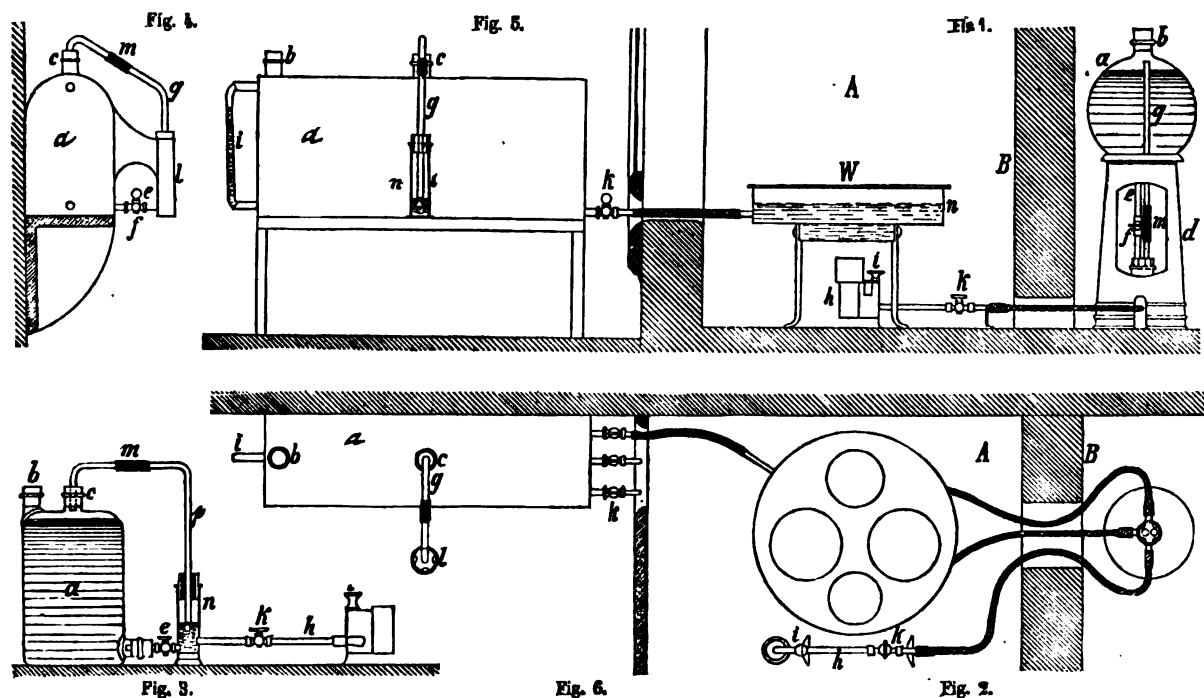
tion, provided it has become neutral, but the green color, in this case, changes to dark-blue under certain conditions. These tints may be preserved for several days even in rather dilute solutions.

By protracted boiling, the solution turns brown, and the slightest excess of acid produces complete discoloration.

The reaction is best performed thus: 1 Gm. of crystallized citric acid and 0.6 to at most 0.8 Gm. of thick glycerin are carefully melted together, upon a small porcelain capsule, over a feeble flame, until the mass ceases to be liquid, and just becomes hard, and proves hard and porous under strong evolution of vapors. The liquid is concentrated until it is but feebly ammoniacal, and, while still warm, mixed with 1 to 3 drops of diluted (1 to 5) red fuming nitric acid, or the same amount of usual 8 to 10% peroxide of hydrogen (on this, see *AM. DRUGG.*, 1884, 93), prepared with hydrochloric acid. Either of them will produce the above-mentioned tints.

Neither tartaric nor malic acids were found to produce this reaction.—*Zeitsch. Anal. Chem.*, 24, 201.

[Note.—It is evident that much de-



An improved alcohol-lamp and constant-level water bath.

globe and to protect the tubes. From the brass feeding tube, several rubber-tubes (three in the annexed cut) lead to as many alcohol lamps (*h*), each provided with a separate stop-cock *k*, and a regulating screw *i*.

The space A in which the water-bath (W, Fig. 1) and alcohol lamps are situated, is best entirely separated from the alcohol reservoir by a wall B, for greater security.

In order to prevent the alcohol in the reservoir *a* from running too rapidly into the lamps, or overflowing from the latter, the following contrivance is used.

Instead of connecting the feeding tubes directly with the reservoir (as is shown in Figs. 1 and 2 for brevity's sake), the alcohol is first made to pass into a second reservoir where its level is regulated. As this arrangement is the same as that adopted by the author for maintaining a constant level in the water bath, its principle is separately illustrated in Fig. 3. The reservoir *a* (whether a water or alcohol reservoir) is connected with a small brass cylinder as shown in the cut. From the cylinder lead one, two, or more branch tubes to one or more water b the case of alcohol, to alc c posing *a* to be full of liq d cocks at e and k

pipes, if such are available; all that is necessary being to shut off the connection with the water bath while refilling it, and shutting off the connection with the mains when restoring that with the water-bath.

A New Test for Citric Acid.

WHEN citric acid is fused with glycerin, in proper proportions, and then evaporated to dryness, there results, if the temperature has been kept as low as possible, a very porous, faintly yellow mass, which appears hard and brittle when cold, but becomes transparent when covered with water while still warm, and then has the appearance of water-soaked gelatin.

If this glycerin compound is dissolved in boiling water of ammonia, and the solution allowed to evaporate spontaneously, the inspissated residue acquires, after a few days, a faintly greenish tint, due to oxidation by the air. If the original solution is freed from ammonia as much as possible, by further evaporation, then diluted with water and treated with peroxide of hydrogen, the green color appears immediately, and very intensely. The same green color may also be produced by adding red fuming nitric acid to the residue left after evapora-

pend, in this reaction, upon the proper temperature. The author's crude method of fusing the citric acid with glycerin appears to be capable of much improvement, by devising some plan of attaining a definite temperature, which may perhaps be best accomplished by using some neutral salt at its melting point, provided the latter is within the requisite limits of temperature, and the salt does not interfere with the reaction.—ED. AM. DR.]

Chemistry and Botany of the Strychnos Nux Vomica Indigenous to Ceylon.

A SHORT time ago, W. R. Dunstan and F. W. Short published an elaborate paper on this subject (*Pharm. Journ.* [3], 15, 1-6).

The conclusions arrived at by the authors are that the pulp of the fruit is poisonous, and in addition to strychnine and brucine, contains the glucoside *loganin*.

The amount of alkaloid in the seeds of *Strychnos Nux-Vomica* varies directly as their size and inversely as their number in the fruit. The seeds from the Ceylon plant are especially rich in alkaloid, one specimen yielding 5.34 per cent.—*Journ. Chem. Soc.*

Powdering Jequirity Seeds.

MR. GERRARD recently received a few pounds of the seeds of *Abrus precatorius* for the purpose of preparing a peculiar ferment which is present in the seed. He was astonished to find a very great difficulty in pulverizing the seeds. In fact he had to give up the attempt as hopeless. They are coated with a peculiar varnish-like coat, and he tried the effect of various solvents upon them for the purpose of finding whether he could penetrate into the albuminous part of the seed. The coating was, however, so obstinate towards solvents that, though he had boiled the seeds in strong nitric acid, in strong sulphuric and strong nitric acid, and even in a solution of caustic soda (1 in 3), he had failed to produce any effect upon them. After that he thought it was quite time to send the seeds to the drug mill.

[Mr. Chubb states that he has reduced the seeds to powder by grinding them in a mortar with coarse powdered flints.]—*Pharm. Journ.*, April 11th.

Fly-Plates.

SOME time ago, a novel form of fly-destroyer was introduced in Europe, namely, fly-paper shaped in the form of plates. The government, however, stopped their sale on account of their containing arsenic. Mr. Adolph Vomacka now suggests to utilize this idea, with the modification of substituting non-poisonous substances for the arsenic. He recommends the following: 150 parts of Surinam quassia are thoroughly boiled with 400 parts of water, and the strained decoction concentrated to 50 parts. On the other hand, a tincture is prepared from 25 parts of long pepper and 80 parts of dilute alcohol, by macerating for three days, filtering and coloring with fuchsin. This tincture is mixed with the extract of quassia, the mixture allowed to settle, the clear liquid heated, and 10 parts of chloride of cobalt and 2 parts of tartar emetic dissolved in it. Plates made of coarse bibulous paper are dipped into this solution, and when saturated, set aside to dry. If it is desired to employ arsenic, a small quantity of arsenious acid [about $\frac{1}{4}$ part] is dissolved in the liquid instead of the cobalt and tartar emetic.—*Rundschau (Leitmeritz)*.

Estimation of Free Sulphuric Acid in Vinegar.

B. KOHNSTEIN has devised the following expeditious method.

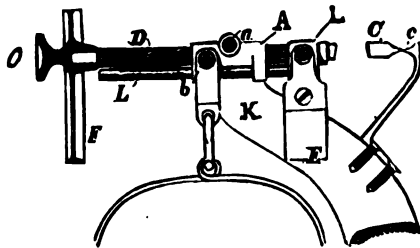
Shake 100 C.c. of the vinegar with freshly ignited magnesia, until the liquid ceases to have an acid reaction, then filter. Evaporate 25 or 30 C.c. of the filtrate to dryness in a platinum capsule, then ignite the residue at a low red heat. This causes the conversion of the acetate into carbonate of magnesium, while the sulphate of magnesium remains unaltered. In order to render the residue more friable, it is moistened with carbonic acid water, and again evaporated, then digested with hot water and filtered. When the washings cease to give a reaction of sulphuric acid, and any lime that might be present in the filtrate has been precipitated, the magnesia now remaining in the filtrate (and washings) is precipitated as pyrophosphate, and from this the quantity of sulphuric acid is calculated.

Should magnesium salts occur in the original vinegar, these may be determined separately by evaporating a portion of the vinegar to dryness, igniting, redissolving the residue with a little hydrochloric acid, separating any lime, and determining the magnesia as pyrophosphate, which is then deducted from the quantity subsequently found.—*Dingl. Pol. J. and Chem. Zeit.*

A NEW RAPID-WEIGHING BALANCE.

THE accompanying cut illustrates a new principle for constructing rapid-weighing scales or balances, which appears to have this advantage over spring-balances that it is much less liable to produce errors by reason of loss of elasticity or wearing out of parts.

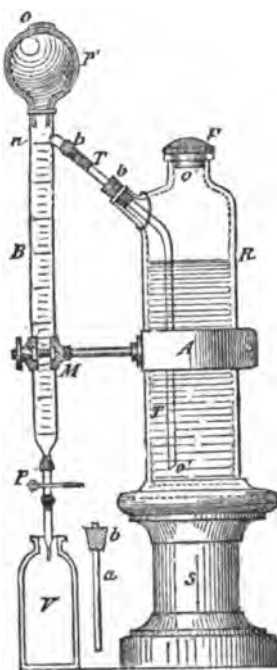
Upon the curved arm *K* of the rigid frame of the balance is arranged a hollow tube *A*, resting in bearings *a*, from which is suspended the scale-pan by means of knife-edges *b*, attached to each side. Through the hollow tube *A*



passes a long pin or guide-rod grooved with a quick thread, and carrying at its inner end, *L*, the counterpoise *E*.

This guide-rod or pin, when turned by means of the knob *O*, will, of course, travel in the grooves of the tube *A*, a full revolution of it being sufficient to bring it up against the stop *C*. The rate of rotation is indicated by a hand upon the dial *F*.

The substance to be weighed is placed upon the scale-pan, and the knob *O* turned until the pin *D* has been carried far enough inward for the counterpoise *E* to balance the scale-pan. The weight is then read off from the dial. This scale has been patented by C. Wittkowsky, of Berlin (Germ. Pat. 30,774; Aug. 4th, 1884).

**IMPROVED BURETTE FOR ALKALIMETRICAL AND OTHER SIMILAR DETERMINATIONS.**

THE advantages of the burette here illustrated consist of the automatic adjustment of the contained liquid at the zero mark, in the rapidity of use, and the security of the contents both against accident and against the influence of air or other contaminations.

R is a reservoir for the volumetric liquid, *S* a stand for supporting the reservoir, *B* a burette divided into $\frac{1}{4}$ C.c., *P* a rubber bulb with a valve opening at *a*.

The apparatus having been put together, the reservoir *R* is filled with the volumetric liquid, and the air exhausted by repeated compression of the rubber bulb. The vacuum thus created causes the liquid in the reser-

voir to rise up into the burette, which will be filled to the mark *o*.

It is stated that vessels of the form *V*, for performing the tests in, are handier than flat ones. The liquids are mixed by agitation instead of by stirring with a glass rod. The rod *a* (with its stopper *b*) serves for taking out sample drops.—*Sucrerie indigène*, 24, 21. *Chem. Centralbl.*

On Compounds of Arsenious with Arsenic Acid.

WHEN arsenious acid is oxidized with nitric acid, an acid liquid results, which sometimes still contains arsenious acid, which latter may be recognized by the fact that the liquid still has reducing properties. On concentrating such a solution, small needle-shaped crystals are separated which have the composition $2\text{As}_2\text{O}_3 \cdot 3\text{As}_2\text{O}_5 \cdot 3\text{H}_2\text{O}$. This compound may be obtained in larger quantity by gently heating 100 Gm. of arsenious acid with 25-30 C.c. of concentrated nitric acid. Soon after the reaction has begun, and red vapors are evolved, the mixture congeals to a mass consisting of the above-mentioned compound and arsenious acid.

When brought in contact with water the compound is split into its constituents. This is, however, not the only compound which may be formed by the two bodies. If a large quantity of arsenious acid is left unoxidized, a compound results, crystallizing in rectangular scales, having the composition $\text{As}_2\text{O}_3 \cdot 2\text{As}_2\text{O}_5 \cdot \text{aq}$. But if arsenic acid is in excess, fine crystals of $\text{As}_2\text{O}_3 \cdot \text{As}_2\text{O}_5 \cdot \text{aq}$ result. Both of these compounds are likewise decomposed by water.—*A. JOLLY in Journ. f. prakt. Chem.*, 1885, 432.

Filtration of Benzin Solutions.

A. GAWALOSKI communicates a useful expedient for causing benzin solutions to pass readily through filters previously moistened with aqueous liquids.

He is often in the habit of making soap-analyses, and in such cases decomposes the soap with sulphuric acid, transfers the separated fatty acids upon a filter, and washes with water. The filtrate and washings are freed from any retained fatty acids by shaking with petroleum ether, and this ether is then used to dissolve the fatty acids upon the filter [the ethereal solution being finally evaporated and dried]. In order to be able to pass the petroleum ether solution through the filter, he has hitherto been compelled to dry the filter for many hours before it would permit the ether to run through.

He has now found that by pouring a little absolute alcohol upon the edges of the filter, the latter is so thoroughly freed from the absorbed water, that it will immediately permit the benzin solution to run through, almost in a continuous stream, thereby shortening the time most considerably.—*Chem.-techn. Central-Anz.*, No. 29.

Parthenine, obtained from *Parthenium hysterophorus*, an herb growing in Jamaica, has been used successfully by Tovar in the treatment of facial neuralgia. One-tenth of a grain was given hourly, and then the dose was decreased in size and frequency. In Jamaica, the drug is used in skin diseases.

The Cuban plant known as "bitter broom" (*escoba amarga*) is said by Dr. Antonio L. Esporon, of Havana, to be a source of this alkaloid. He reports two cases of neuralgia treated successfully with this remedy, and says he has employed it in many cases of facial neuralgia with great success, and believes that it is especially indicated in neuralgias of malarial origin.

Fermentative Processes in the human Mouth and their Prevention.

ACCORDING to Miller, no less than five different fungi exist in carious human teeth. These fungi have the property of causing fermentation in solutions containing fermentable carbohydrates, and producing, as one of the products, optically inactive lactic acid. Free oxygen is not required for the production of this fermentative action, though it is probably accessory for the life and growth of the fungi. The latter have also the power of inverting sugar, that is, to convert fermentable cane-sugar into fermentable glucose.

When sound teeth are exposed to the action of these fungi, they are rapidly deprived of lime, and, on microscopic examination, large masses of bacteria will be found in the dental channels. Experiments were made with various antiseptics, to ascertain which would answer best to retard or to prevent this fermentation. The following are the results:

The fermentative action is

	prevented by 1 in	arrested by 1 in
Corrosive Sublimate,	500,000	100,000
Nitrate Silver,	100,000	50,000
Iodine (in Alcohol),	15,000	6,000
Iodoform,	10,000	5,000
Naphthalin,	9,000	4,000
Eas. Oil Mustard,	5,000	2,000
Permang. Potassium,	2,000	1,000
Oil Eucalyptus,		600
Carbolic Acid,	1,000	500
Hydrochloric Acid,	1,000	500
Carbonate Sodium,	200	100
Salicylic Acid,*	125	75
Alcohol, absol.,	25	10

These results are of considerable interest not only to dentists, but also for the preparation of efficient tooth-powders. [Of course, some of the above agents are unsuitable for use in tooth-powders. But naphthalin (perfumed with oil of bergamot), oil of eucalyptus, and carbolic or salicylic acids will be quite appropriate.]—*D. med. Woch. and Chem. Centralb.*

Contributions to the Knowledge of Pepsin.

C. SUNDBERG has prepared pure pepsin, free from albumin, by destroying the "rennet-ferment" by means of heating to 40° C. (104° F.), during which operation any albumin still present is also converted into "pepsin." The pepsin solution thus obtained is mixed with calcium chloride and sodium phosphate, then neutralized with very dilute ammonia, and this operation repeated several times, until a precipitate is no longer produced. This precipitate, consisting of calcium phosphate and pepsin, is washed with water, dissolved in the smallest possible quantity of 5% hydrochloric acid, and then dialyzed until the contaminating salts are removed. The clear, colorless solution finally obtained excels the original solution in digestive power.†

When tested qualitatively with reagents for albumin, the solution gave negative results.

The only agent which precipitated the pepsin was absolute alcohol, which did not, however, diminish its digestive power, except when allowed to be in contact with it for a long time, in which case it became insoluble and inert. These results render it very probable that pepsin is a modification of albumin.—*Zeitsch. f. Phys. Chem.*, 1885, 319.

* Dissolved in alcohol.

† We believe that some useful hints may be derived from the statements here made, for preparing a purified pepsin (free from mucus, etc.). Regarding the process of dialysis, our readers will do well to refer to the important article in *New Rem.*, 1883, p. 203. "On Dialysis by means of Chloroform Water, etc."—*Ed. AM. DR.*

Analysis of Liebig's Extract of Beef.

ACCORDING to R. Sendtner, the analysis of Liebig's extract of beef is carried out, in the hygienic institute of Munich, in the following manner:

1. *Ash*: One gramme of the extract is carbonized in a platinum capsule, and afterwards incinerated until a white ash is left.

2. *Total Dry Solids*: Two grammes are dried for thirty-six hours at a temperature of 100° C.

[*Note*.—In our experience, it is next to impossible to obtain reliable results by attempting to dry even very thin layers of the extract by itself alone, as it obstinately retains moisture. The plan which we have found to answer best is to dissolve a definite weight (say 1 Gm.) of the extract in water, and to mix this intimately with a known weight of sugar of milk, previously dried to a constant weight in a tared capsule (with rod), the mixture being frequently stirred towards the end, and care being taken that no loss may occur by careless manipulation.—*Ed. AM. DR.*]

3. *Solids soluble in Alcohol*: Two grammes are dissolved in 9 C.c. of water, and precipitated by adding 50 C.c. of alcohol of 93%. The liquid is poured off, and the copious precipitate which adheres strongly to the glass washed with alcohol of 80% until the latter ceases to dissolve anything. The united alcoholic liquids are evaporated and the residue dried for six hours at 100° C.

[In this case the time may also be much shortened by evaporating the solution upon sugar of milk. Powdered pumice stone or other similar absorbents may, of course, be used in place of the sugar of milk.—*Ed. AM. DR.*]

Genuine Liebig's Extract of Beef should yield:

Ash	22-25%.
Water	16-21%.
Alcoholic Extract	56-65%.

—*Zeit. Anal. Chem.*, 1885, 292.

The British Opium Trade with China.

THE *Standard* reports that the new convention between China and England (India), in regard to the opium trade, has been practically accepted by both governments, though it had not yet been signed at the time when the news reached the *Standard*. The convention is in form of a supplementary article to the treaty of Chefoo negotiated in 1876 by Sir Thomas Wade. The two principal stipulations are: 1, the abolition of the inland obstacles, and 2, the establishment of a uniform inland duty (so-called *lekin*). The latter is now put at 60 taels (£20 sterl.) per case, while the duty of import established by the treaty of Tientsin, viz., 30 taels per case, remains as before. Heretofore, the *lekin* varied in the different harbors, and according to the whims of the local authorities from 21 to 86 taels per case, and was under the control of special officials; while hereafter the full amount of 90 taels, or £30 per case (30 for import and 60 as *lekin*) is to be paid immediately on landing the opium. No further duty or tax will then be collected upon it in any part of the Chinese Empire.

Anisic Acid, obtained by oxidation of the oil of anise, is spoken of as possessing properties analogous to those of salicylic acid as an antipyretic and antiseptic. Its prismatic, colorless crystals are soluble in alcohol and ether. Large intravenous injections have caused epileptoid convulsions in animals.—*N. Y. Med. Jour.*, from *Gazz. Med. Ital. Lomb.*

On the Absorption of Petroleum Ointment and Lard by the Skin.

E. JERSS has investigated the question whether ointments made with vaseline or other petroleum ointments are really as difficult of resorption by the skin, or of yielding their medicinal ingredients to the latter, as has been asserted. In solving this question, he considered himself justified in drawing conclusions from the manner in which such compounds behaved towards dead animal membrane. If any kind of osmosis could take place, he argued, from ointments prepared with vaseline, etc., through dead membranes, such osmosis would most probably also take place through living membranes. At all events, the endosmotic or exosmotic action of the skin of a living body must necessarily play an important rôle in the absorption of medicinal agents; and on the other hand, it is plain that fats which render the living skin impermeable necessarily also diminish, or entirely neutralize, its osmotic action. To test this, the author made the following experiments:

Bladder was tied over the necks of three wide-mouthed vials, with bottoms cut off, and each was filled with iodide of potassium ointment.

No. 1 contained an ointment made with lard.

No. 2, one made with unguentum paraffini (Germ. Pharm.), and

No. 3, one made with ung. paraffini mixed with 3 per cent of lard.

All three vials were then suspended in beakers filled with water. After standing 24 hours, at the ordinary temperature, the contents of none of the beakers gave any iodine reaction. After having been placed into a warm temperature, between 25-37° C. all three showed iodine reactions after three hours, Nos. 2 and 3 very strongly, No. 1 (with lard alone) very faintly.

The same experiment was now repeated, with the precaution that the bladder was previously washed completely free from chlorine. Each vial was suspended, at a temperature of 25-27° C. in 50 Gm. of distilled water. After three hours, the contents of No. 1 (containing the ointment made with lard) gave no iodine reaction, the contents of the other two, however, gave traces. After eight hours no further change had taken place. The temperature was now raised to 30-35° C., and kept so for eight hours. All three beakers now gave a strong iodine reaction, 0.2 C.c. of normal silver solution being required for each 15 Gm. of the contents of the beakers.

In addition to the iodide, some of the fatty base had osmoted through the membrane in each case.

The next experiment was made by substituting a piece of the skin (freed from chlorine by washing) of a freshly-killed sheep, for the bladder. The ointment in No. 3, in this case was made with ten per cent of lard. No reaction was obtained, at the ordinary temperature, after 12 hours; nor after 8 more hours, at a temperature of 25°-30° C. After letting them stand for 8 hours longer at 30-37° C., a faint reaction was obtained in the case of the ointment made with ung. paraffini; a still fainter with No. 3; but no reaction at all with No. 1 (that made with lard). None of the fats passed through by osmosis. After 8 hours more, the iodine reaction was quite decisive in all cases, but no fat had passed through even now. On titrating 20 Gm. of the contents of each beaker,

No. 1 required 0.5 C.c. of silver solution.
No. 3 " 0.5 C.c. "
No. 2 " 0.7 C.c. "

showing that the most iodine had osmoted in the case of the ointment made with unguentum paraffini (equivalent to vaseline).

Tannate of Quinine—Chininum Tannicum.*

TANNAS Chinini, *Neerl.*; Tannas Quininae, *Belg.*; Tannate de Quinine, *Gall.*

About: $C_{20}H_{21}N_3O_9, 8C_{11}H_{11}O_8H_2O = 1484$
or $C_{20}H_{21}N_3O_9, 8C_{11}H_{11}O_8, 16HO = 1484$

(Aust., Belg., Gall., Germ. I., Græc., Helv., Neerl., Russ.)

Prepared by precipitating a solution of quinine with tannic acid, washing, and drying at a very gentle heat. The Germ. I., Græc., Helv., Neerl., and Russ. employ the sulphate of quinine; the Belg. and Gall. the acetate; the Aust. gives no formula. The sulphate is dissolved in 20-30 parts of water with the aid (of the least possible quantity) of diluted sulphuric or acetic acid, and the cold solution precipitated by aqueous solution of tannic acid. 1 part of sulphate requires 2.20 to 2.22 parts of tannic acid, in place of which all the pharmacopœias, with the exception of the Græc., prescribe 3 parts, which is an injurious excess, diminishing the yield by partial resolution of the precipitate. The Græc., which at first directed to obtain the precipitate by simply "adding watery solution of tannic acid," states in the appendix that 2 parts are required for precipitation. The several directions may be classified as follows:

	Quin. Sulph.	Acid.	Dist. water.	Tannic acid.	Dist. water.
Germ. I.	1	Ac. Sulph. dil.			
Russ.		q. s.	30	3	30
Græc.		Ac. sulph. or acet. dil.		ab.	
		q. s.	20	2	q. s.
Helv.	1	Any acid, q. s.	30	3	30
Neerl.	1	0.75 parts ac. sulph., spec. gr. 1.115....	20	3	60

After precipitation the mixture is allowed to stand for a while (in the cold), the precipitate is then collected, washed with small portions of water (carefully, Neerl.), and dried with a very gentle heat (without heat, Neerl.).

It is, however, necessary to hasten the drying as much as possible, either by soaking the adhering liquid up with blotting paper or porous plates, or by frequent turning, since otherwise the product may easily become mouldy.

The Belg. directs to dissolve pure quinine, in a capsule placed on the water-bath, in diluted acetic acid of sp. gr. 1.012 to saturation, and, after cooling, to add aqueous solution of tannic acid until nothing more is thrown down. The precipitate is then washed with water and dried.

The Pharm. Gall. directs to mix hydrate of quinine with water, to boil and to add acetic acid of 50% in such proportion that the quinine dissolves, and the liquid acquires only a very faintly acid reaction. When the liquid has cooled, it is mixed with a cold, filtered solution of tannic acid, until the precipitate first formed is completely redissolved. The liquid is now exactly neutralized with bicarbonate of sodium, whereupon the tannate of quinine is completely separated. This is then collected on a filter, dried, finely powdered, washed with distilled water, and again dried. It should be amorphous and colorless, and should contain 20-21% of quinine.

According to the other pharmacopœias, tannate of quinine is a yellowish-white or yellowish amorphous powder of a faint (Helv.) peculiar odor (Germ. I.). Its taste should be scarcely

(Belg.) or but feebly (Neerl.) bitter, more astringent than bitter (Græc.), first astringent, then bitterish (Helv.), astringent and bitter (Aust., Germ. I., Russ.). It is very difficultly soluble in water; according to the Russ., in 800 parts of cold and in 30 parts of boiling water. When heated with water, it cakes together (Aust., Germ. I.). It is also soluble in alcohol (Græc., Helv.), with difficulty (Germ. I.), easily (Aust., Neerl.); according to the Russ., in 50 parts of cold and in 3 parts of boiling alcohol; also in glycerin (Helv.). When gently heated, it melts readily, is decomposed at a stronger heat, and is finally dissipated without residue (Neerl.). The aqueous solution assumes a bluish-black color on addition of very dilute solution of a ferric salt. If the preparation is triturated with double the quantity of oxide of lead and some water to a fine paste, the latter dried, and extracted with alcohol, on evaporation of the latter, quinine will be left behind (Aust.), and may thus be determined qualitatively and quantitatively. The oxide of lead may also be replaced by caustic lime, and the quinine extracted with chloroform. The Helv. obtains the same result by triturating 1 part of tannate of quinine with 2 parts of sugar of lead and a little concentrated solution of carbonate of potassium to a paste, digesting this for a few hours, and then exhausting it with strong alcohol.

According to the Russ., the salt consists of 20% quinine, 74% tannic acid, 1% sulphuric acid, and 5% of water. The formula placed at the beginning yields, by calculation, 22.594% quinine, 67.364% tannic acid, and 10.042% of water. It should be kept in well-closed vessels (Græc., Russ.).

Flückiger's Method of Opium Assay.

PROF. FLÜCKIGER has recently made a report to the Pharmacopœia Committee of the German Pharmaceutical Association, which is printed in the *Archiv der Pharmacie*, and in which the author critically reviews not only his own method previously published, but also those which have since then been advocated or adopted by others (Squibb, Mylius, Van der Burg, the U. S. Pharm., etc.).

In respect to the method prescribed by the U. S. Pharm., Prof. Flückiger remarks that it is quite good, but that, in following its directions, it is scarcely possible to obtain 50 C.c. of filtrate. To obtain this, it is necessary to strongly beat or press the magma of opium upon the filter.

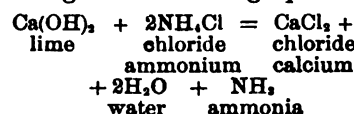
Regarding the so-called lime process, which is also involved in the method of assay given in the U. S. Ph., caustic lime or hydrated lime dissolving the morphine in the opium, and passing together with the morphine into the filtrate, Prof. Flückiger makes the following comments:

"The 'lime-process,' to use this term, has undoubtedly certain advantages. It rapidly brings about a solution of the morphine, and the latter is so completely precipitated from this solution by chloride of ammonium, that the filtrate is not even rendered cloudy by the addition of iodohydrargyrate of potassium.

Of course the quantity of lime really necessary is much smaller than is usually directed to be taken. In one experiment, Prof. Flückiger shook 8 Gm. of opium, of 10% morphine, with 1 Gm. of caustic lime (CaO) and 80 Gm. of water. On the following day he filtered off 42.5 Gm. of filtrate, mixed this with 2 Gm. of chloride of ammonium, and, after the separation of morphine, determined the amount of lime in the filtrate as oxalate. After ignition of the latter, there remained 0.205 CaO. Hence this was the quantity keeping in solution the alkaloid of 4 Gm. of the opium: 100 Gm. of the

latter would then have required 5.125 Gm. of caustic lime.

The separation of the morphine, on the addition of the chloride of ammonium to the lime solution, takes place according to the following equation:



Hence, theoretically, 74 parts of hydrated or 56 of caustic lime require 107 of chloride of ammonium. In practice, it is best to use 2 parts of chloride of ammonium for every 1 part of caustic lime, or 1½ parts of hydrated lime.

As a result of his late studies, Prof. Flückiger proposes the following slight modification of his method as given in the text of the German Pharmacopœia, the main object of the change being to insure the removal of the narcotine. He also adds the remark that some authorities condemn the weighing of the morphine while still in the small flask—though this is undoubtedly the most exact method—and prefer instead to weigh it upon a filter, which he does not approve, but is nevertheless compelled to adopt for the present.

Improved Process.—Place 8 Gm. of powdered opium upon a filter of 80 millimeters (3¼ inch.) diameter, and wash it gradually with 18 Gm. or 25 C.c. of ether, the funnel being kept well covered. Force out the last drops of filtrate by tapping the funnel, dry the opium on a water bath, transfer it to a small flask containing 80 Gm. of water, at 25° C. (59° F.), and shake well repeatedly. After twelve hours, pour the mixture on the previously-used filter, and collect 42.5 Gm. of the filtrate in a small flask, to which add 12 Gm. of alcohol (spec. gr. 0.830), 10 Gm. of ether and 1 Gm. of water of ammonia, stopper well, and set it aside at a temperature of 12° to 15° C. (53°-59° F.) and shake repeatedly. After twenty-four hours, moisten a new tared filter of 80 Mm. diameter with ether, pour upon it the ethereal layer in the flask, add 10 more grammes (14 C.c.) of ether to the latter, and shake well. Again pour the ethereal layer upon the filter. When this has passed, pour the whole contents of the flask upon the filter, and wash the crystals of morphine twice with a mixture of 2 Gm. of diluted alcohol (sp. gr. 1.112), 2 Gm. of water, and 2 Gm. of ether. Dry at a gentle heat, finally at 100° C. (212° F.) and weigh, adding the morphine which may still adhere to the inside of the flask.

Density and Strength of Milk of Lime.

ACCORDING to G. Lunge, the proportion of caustic lime in any given sample of milk of lime—in which all coarse particles have been allowed to settle—may be pretty closely determined with a hydrometer. The following table is given by Lunge:

Degrees Baumé	Spec. Grav.	in 1 liter.	Caustic Lime (CaO) in 100 parts.
1	1.007	7.5 Gm.	0.745 parts.
5	1.037	46 "	4.48 "
10	1.075	94 "	8.74 "
15	1.116	148 "	13.26 "
20	1.162	206 "	17.72 "
25	1.210	268 "	22.15 "
30	1.263	339 "	26.84 "

—Dingl. Polyt. Journ.

The Products of Fusel Oil during Acetification.

WHEN alcohol, containing fusel oil, is subjected to the process of acetification, it has been found that the fusel oil is changed to acetate of amyl, which, having a fruity odor ("pear-essence") contributes to the aroma of the vinegar.—*Chem. Centralbl.*

* From Dr. Bruno Hirsch's Universal-Pharmacopœe. See page 160. The abbreviations refer to the national pharmacopœias.

THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 8. WHOLE No. 134

FRED'K A. CASTLE, M.D., - EDITOR.

CHAS. RICE, Ph.D., ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

AUGUST, 1885.

SUBSCRIPTION PRICE per year, \$1.00
SINGLE COPIES, 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

PROF. JOHNSTON's paper on photography, a continuation of which appears with this number, should suggest to some of our readers the sale of photographic chemicals and other materials as a feature of their business which may prove remunerative.

There are already amateur photographers in nearly every community, the number is rapidly increasing, and there is no good reason why they should go to stationers, opticians, or dealers in photographic goods exclusively for oxalate of potassium, sulphate of iron, bromide of potassium, nitrate of silver, alum, hyposulphite of sodium, pyrogalllic acid, water of ammonia, etc., when they are all to be found in any drug-store.

It involves but small outlay of space or money to keep a stock of dry-plates and the necessary apparatus for developing negatives and making prints, and it might pay to keep in stock and ready-made, developing and toning solutions.

Besides the mere focusing of a camera and exposing a plate, the manipulations of photography are almost entirely chemical, and besides the practical photographer, no one is better fitted than a pharmacist to act as an expert adviser for the amateur,

whose experience has not yet taught him how to overcome the technicalities of the art of picture-taking.

In some localities, it might even be advisable to stimulate business by a judicious display of photographic materials, including amateur outfits.

THE National Retail Druggists' Association seems to have practically come to an end. A small membership survives the second year of existence, but it is far too small to justify the continuance of the organization unless the ingenuity of its promoters can suggest some object to be accomplished which can be better achieved through national than by local association. The history of the "Campion Plan" suggests that even questions of such importance to the retail trade of the whole country can be handled by small and local bodies with better results than by the unwieldy efforts of a national convention. For all purposes it will be found that a thorough organization of the trade in the form of small, local associations will accomplish more, and prove far more satisfactory than an association which aims at enrolling in its membership thousands who, in the nature of things, can never attend its meetings, nor participate directly in its work. When co-operation becomes desirable, such local associations can readily secure concert of action through a State convention of delegates, and each State convention can as readily be represented in a national body similarly constituted.

It is worthy of consideration by State pharmaceutical associations already in existence, whether the welfare of the profession would not be promoted by abolishing the system of permanent membership and, instead, of adopting the plan of representation by delegates elected for a term of years by local organizations. This would do more than anything else can do to stimulate local organization, and would make every State association an active association. There would be fewer persons connected with these bodies whose activity is limited to the payment of dues, and it would, at all times, represent the current opinions and wishes of the trade. Another advantage to be derived from such a plan of organization would be the difficulties it would oppose to the establishment of a clique of managers. In few instances, indeed, do persons who wield a controlling influence in such organizations make unfair use of their opportunities for personal ends, while, on the other hand, the instances are common in which both time and money are cheerfully given to secure the accomplishment of measures calculated for the good of all. Nevertheless, it is a fact that the existence of a permanent membership does result, in most organizations, in a few persons, comparatively, doing work which should be shared in by many, and in time it leads to the establishment of precedents which interfere more or less with the main purposes of the organization.

THE present state of the affairs of the N. R. D. A. should serve to point out to the American Pharmaceutical Association its opportunity for advancing the interests of pharmacy generally. Had there existed in the composition of the more scientific body some provision for discussion and action upon matters that are purely questions of trade policy, the former association would, probably, never have come into existence. There are now many reasons why it may be desirable to provide for the consideration of such topics as they may from time to time be presented, even if it involve the addition of another day to the session or greater

attention to economy of time by condensing certain reports into abstracts to be presented at the meeting, while the detailed reports may be postponed for official publication.

There is no good reason why pharmacists should have separate organizations for considering trade interests independently of other matters of a more professional nature, and the truth of this has been sufficiently demonstrated during past two years by the appointment of nearly the same persons as representatives in the A. P. A., and the N. R. D. A., and the coincidence of time and place of meeting for both bodies.

Mr. Henry Betts Parsons, well known throughout the profession as a skilled pharmacist and chemist, an able writer, and as one of the champions of advanced pharmaceutical education, has lately been deservedly honored by the University of Michigan conferring upon him the honorary degree of Master of Pharmacy.

Obtaining Iodine in Peru.

ACCORDING to the *Génie civil*, 1884, 5, 106, about 1,600 kilos of iodine are produced monthly at the works of Peruana, in the province of Tarapaca, in Peru, from the iodous mother-liquors obtained in the manufacture of sodium nitrate. The forms of apparatus constructed by R. Harvey and J. T. North, in 1881, are employed for the preparation of the hydrogen sodium sulphite used to precipitate the iodine, and for distilling the latter. The hydrogen sodium sulphite is obtained by saturating a solution of soda with sulphurous anhydride. The soda is prepared by furnacing an intimate mixture of sodium nitrate and coal-dust. The essential constituent of the product of the reaction is soda contaminated with sodium chloride, sodium sulphate, earthy ingredients, and unburnt coal.—*Dingl. Polyt. Journ.*

New Method of Administering Pepsin.

DR. PROSSER JAMES, in the *Brit. Med. Journ.*, describes a combination of pepsin with salt which he has devised in order to secure the pepsin being taken at the time it is required, that is, with the food on which it is to act. A simple mixture of pepsin with salt may be successfully employed as a digestive condiment, provided it be freshly prepared each time; for such a mixture, if kept, is apt to decompose, and the patient who has once observed this will take no more of the putrefying powder. To overcome this difficulty, the doctor says the pepsin and the chloride must be brought together in such a way that possibly a compound, or peptochloride may be formed. Whether such union occur or not, a powder thus prepared is quite stable.—*Chem. and Drug.*

Cyanide of Gold and Potassium

Is employed by Dr. Galezowski, in form of hypodermic injection, in cases of ataxic papillary atrophy. The dose is 5 milligrammes (about $\frac{1}{4}$ grain) at first, and afterwards 10 milligrammes (about $\frac{1}{2}$ grain) every day or every two days. The solution should be freshly prepared, and with great care, a good proportion being:

	Gm.	
Cyanide of Gold and Potassium	0.10	1.6 gr.
Distilled Water.	10.00	160 min.

8 minims = 5 milligrammes. —*Journ. de Pharm. et Chim.*

Remarks on the Construction of Chemical Equations.

It seems a matter of regret that in most, if not all, of our text-books on chemistry the principles of the method of expressing chemical changes by the arrangement of symbols called (from algebraic analogies) an "equation," are either omitted altogether or very imperfectly and cursorily explained. In the more advanced text-books such elementary knowledge appears to be assumed, while in the elementary treatises it is not given. After a description of some experiment or reaction, the student is generally abruptly told that "the change may be represented by the following equation;" and then follows the cut-and-dried line of formulæ, with little or no explanation as to what the signs connecting the formulæ really mean, and why certain "coefficients," and not larger or smaller ones, are prefixed to the formulæ.

I do not attach an excessive value to symbolic representations of chemical changes, nor do I think it right to plunge a beginner into a maze of formulæ before he has made such progress in practical work as to feel the want of some short and significant method of expressing the results of his experiments, and to be able to appreciate rightly and fully the grounds on which certain symbols, having exact reference to weight and volume, have been chosen to represent the substances he has dealt with. I should rather consider that the atomic theory is best introduced after the student has become familiar with the series of nitrogen oxides, and with ethylene and methane, the consideration of which led Dalton to propose the theory, and to invent the system of symbols for the direct purpose of expressing his chemical atoms. Such series, together with the elements hydrogen, oxygen, and nitrogen, which would have been previously studied, afford valuable illustrations of Avogadro's law, and lead up to the conception of molecules as distinguished from atoms, the development of which will probably render the chemistry of the future little more than a branch of physics.

I do not, however, intend here to sketch out a course of chemical work, but simply to urge the desirability of fuller and more exact explanations of the system of symbols and equations than are usually given. In furtherance of this object, I should like to submit the following observations, apologizing at the same time for their elementary character.

1. A chemical change consists in a molecular action of such a kind as to cause a re-arrangement of the atoms of the substances which take part in it, with formation of new molecules differing in properties from the original ones.

2. In the quantities of substances taken for practical experiments many millions of molecules must take part in the change; but we can express the result quite accurately by stating what occurs in the case of the *smallest* number of molecules that can take part in the action at all. Thus, when we mix 1 C.c. of oxygen gas with 2 C.c. of hydrogen gas, and cause combination to take place, it is sufficient to consider the action that occurs between one molecule of oxygen and two molecules of hydrogen, there being sufficient grounds for believing that the same action is going on between every other molecule of oxygen and pair of molecules of hydrogen in the whole mass of the mixed gases.

3. In expressing a chemical change by symbols, then, we proceed in the following way:

Given—

1st. The qualitative results of the action, i. e., a knowledge of

all the substances which take part in it and are produced by it.

2d. The fact that no weight is lost or gained in the action.

3d. The correct formulæ of the molecules of all the substances concerned in it.

We place the formulæ of the original molecules as the factors on the left-hand side of an equation, and the formulæ of the new molecules on the right-hand side; and we choose as coefficients for these factors the *smallest* whole numbers which will satisfy the equation. These coefficients, although often obtainable by mere inspection and common sense, and generally in text-books put thus before learners in a rather haphazard way, can be best determined by the usual algebraic methods for solving simultaneous equations.

Thus we may put a, b, c, \dots for the coefficients on one side of the equation and p, q, r, \dots for those on the other side, and adopt their minimum integral values (since less than one molecule cannot be dealt with), in constructing the complete equation for expressing the chemical change.

The following may serve as a simple example: In the action of copper on hydrogen nitrate, it is known that under definite conditions nothing but copper nitrate, nitrogen dioxide, and water are produced. Hence we have:



Now if we consider how the atoms to which a refers are distributed in the new molecules expressed by the formulæ on the right-hand side of the equation, we find:

With regard to the
Hydrogen atom, $a = 2r$ (i.)
Nitrogen atom, $a = 2p + 2q$ (ii.)
Oxygen atom, $3a = 6p + 2q + r$ (iii.)
Copper atom, $b = p$,

Eliminating q and r ,

$$\text{From (i.), } r = \frac{a}{2}$$

$$\text{From (ii.), } q = \frac{2a - 2p}{2}$$

Substituting these values in (iii.)—

$$3a = 6p + 2 \cdot \frac{2a - 2p}{2} + \frac{a}{2}$$

$$6a = 12p + 2(a - 2p) + a \\ = (12 + 4)p + 3a$$

$$\text{Hence } (6 - 3)a = 8p, \therefore 3a = 8p, \\ \text{and } p = \frac{3}{8}a.$$

Again, from (ii) —

$$2q = a - 2\left(\frac{3}{8}a\right) = \left(1 - \frac{3}{4}\right)a = \frac{1}{4}a. \\ \therefore q = \frac{1}{4}a.$$

And from (i.), $r = \frac{1}{4}a$.

Hence, taking $a = 8$ a minimum integral
 $b = 3$ [value,
 $p = 3$
 $q = 1$
 $r = 4$

Substituting these values in the chemical equation, we get—



Again, in the preparation of nitrogen dioxide by Pelouze's method, it is known that the only substances required for the reaction are iron protosulphate, potassium nitrate, and hydrosulphate; and that the only substances produced are iron persulphate, potassium hydrogen sulphate, nitrogen dioxide, and water.

Hence,—



Then with regard to the,—

Iron atom, $a = 2p$ (i.)
Sulphur atom, $a + c = 3p + q$ (ii.)
Oxygen atom, $4a + 3b + 4c = 12p + 4q + 2r + s$ (iii.)
Potassium atom, $b = 2q$ (iv.)
Nitrogen atom, $b = 2r$ (v.)
Hydrogen atom, $2c = q + 2s$ (vi.)

From (i.) we have $p = \frac{1}{2}a$.

" (iv.) " $q = b$.

" (v.) and (v.) $2r = b \therefore 2r = q$.

" (vi.) $\frac{1}{2}q + s = c$.

Substituting these values in (iii.),—

$$4a + 3q + 2q + 4s = 6a + 4q + q + s. \\ \text{Whence, } 3s = 2a, \text{ and } s = \frac{2}{3}a \dots \text{(vii.)}$$

Substituting these values of c, p , and s in (ii.),

$$a + \frac{1}{2}q + \frac{2}{3}a = \frac{1}{2}a + q.$$

Whence, $\frac{1}{2}a = \frac{1}{2}q$, and $q = \frac{1}{2}a \dots \text{(viii.)}$

Substituting the values of q and s in (vi.),

$$2c = \frac{1}{2}a + \frac{1}{2}a, \text{ and } c = \frac{1}{2}a \dots \text{(ix.)}$$

Thus we have:

From (iv.) and (viii.), $b = \frac{1}{2}a$.

" (ix.) $c = \frac{1}{2}a$.

" (i.) $p = \frac{1}{2}a$.

" (viii.) $q = \frac{1}{2}a$.

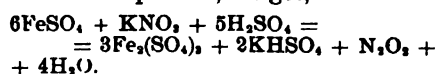
" (iv.) and (v.) $r = \frac{1}{4}a$.

" (vi.) $s = \frac{1}{3}a$.

Whence, taking $a = 6$, as minimum integral value:

$$b = 3 \quad q = 3 \\ c = 3 \quad r = 1 \\ p = 3 \quad s = 4$$

Substituting these values in the chemical equation, we get,—



Possibly such calculations (although extremely easy) will not in all cases take a shorter time than the haphazard common-sense method usually adopted; but I think that it is at any rate worth while to draw attention to the real principles involved in the construction of chemical equations.—H. G. MADAN in *Chem and Drugg.*, June 5th.

Note by Ed. Am. Drugg.—To recapitulate, for the benefit of the younger readers, the method here described enables one to ascertain the lowest number of molecules entering into a reaction, provided the following conditions are fulfilled:

1. All the substances reacting and all the substances produced must be known.
2. Their correct chemical formulæ must be written down.

Each separate constituent of the reaction is designated by a letter, and this letter is referred to each element entering into the molecule of this constituent, for the purpose of forming an equation which shall express how many times, and under which of the letters, this element occurs on each side of the original equation. The calculation is then performed in the usual manner. For instance, when chlorine acts on hydrate of potassium, under certain conditions, there is produced chloride, chlorate of potassium and water.



Then we have:

$$\begin{array}{ll} \text{for K: } a = p + q & \text{I.} \\ \text{for O: } a = 3q + r & \text{II.} \\ \text{for H: } a = 2r & \text{III.} \\ \text{for Cl: } b = p + q & \text{IV.} \end{array}$$

To save time, one of the unknown quantities (best that which occurs most frequently in the equations) may at once be replaced by some definite number, say 1, or, to avoid too many fractions, 12 or 24, etc.

Let us put $a = 12$ V.

Then from III. it follows that:

$$\frac{12}{6} = \frac{2r}{r} \quad \text{VI.}$$

From I+IV we have $a = b$
From V. $12 = b$ VII.

Substituting the values found in eq. II., we have:

$$\frac{12}{6} = \frac{3q + 6}{3q} \quad \text{VIII.}$$

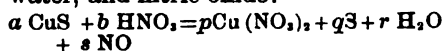
Finally, substituting in IV.

$$\begin{array}{l} 12 = p+2 \\ 10 = p \end{array} \quad \text{IX.}$$

It will be seen that the values found—12, 10, 2, 6—may be reduced to the more simple figures, 6, 6, 5, 1, 3. We therefore substitute these in the reaction:



One more example: When nitric acid acts upon cupric sulphide, there is produced cupric nitrate, sulphur, water, and nitric oxide:



Then we have:

$$\begin{array}{ll} \text{for Cu : } a = p & \text{I.} \\ \text{for S : } a = q & \text{II.} \\ \text{for H : } b = 2r & \text{III.} \\ \text{for N : } b = 2p + s & \text{IV.} \\ \text{for O : } 8b = 6p + r + s & \text{V.} \end{array}$$

Let us put $b = 24$.

Then from eq. III. we have:

$$\begin{array}{l} 24 = 2r \\ 12 = r \end{array}$$

Multiplying eq. IV. with 3, and then combining eq. IV. and V., we have:

$$\begin{array}{l} 6p + 3s = 6p + r + s \\ 2s = r \\ 2s = 12 \\ s = 6 \end{array}$$

Substituting in eq. IV., we have:

$$\begin{array}{l} 24 = 2p + 6 \\ 18 = 2p \\ 9 = p \end{array}$$

Substituting in eq. I., we obtain:

$$a = 9$$

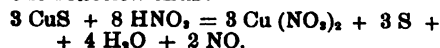
and, since $q = p$ (eq. I. and II.), it follows that:

$$q = 9$$

The values found for the unknown quantities:

$$\begin{array}{cccccc} a & b & p & q & r & s \\ 9 & 24 & 9 & 9 & 12 & 6 \end{array}$$

may be reduced to simpler figures by dividing with 3. We therefore write the reaction thus:



A New, Very Delicate Indicator for Alkalies.

THEODOR LEHMANN and JULIUS PETRIE have published the results of some studies and observations made with a coloring matter originally obtained by Liebermann from phenol. This is produced by the action of concentrated sulphuric acid, in presence of a nitrite, upon phenol, and appears in form of red-brown, amorphous flakes, soluble with yellow color in various neutral solvents, and in concentrated sulphuric acid with dark blueish-green color. A spectroscopic examination led the authors to suspect that this coloring matter was not a single chemical individual, but contained a second coloring substance which appeared to have great resemblance to litmus. It is reddened by acids and rendered blue by alkalies, the transition being extremely sharp and sudden, and taking place even in the most dilute solutions. This coloring matter is prepared in the following manner:

Mix 5 C.c. of phenol with 5 C.c. of concentrated sulphuric acid, keeping the mixture cool, and then add, in drops, 20 C.c. of nitrosyl-sulphuric acid (prepared by dissolving 5 parts of nitrite of potassium in 100 parts of cold, concentrated sulphuric acid). When all is added, heat the mixture on a water bath to 80° C. (176° F.) until the mass has a dark violet-blue color, and until a sample, taken out and mixed with enough concentrated sulphuric acid to form a transparent mixture, ceases to possess the characteristic spectrum of Liebermann's coloring matter (see below), but shows a clear absorption-band from B $\frac{1}{2}$ C to D $\frac{1}{2}$ E, the color being pure blue in proper dilution.

[Liebermann's coloring matter behaves as follows, if used in solution

which is just dilute enough to be transparent. A faint ray of light is visible at E. Next the green becomes visible, while red and yellow are absorbed in tolerably sharp definition up to D $\frac{1}{2}$ E. From E $\frac{1}{2}$ F the absorption progresses less suddenly, but is not so intense in the blue portion, so that a little blue light passes through. But no isolated band makes its appearance.]

When this point has been reached, the mixture is poured into about 2 liters of cold water, when the coloring matter will separate in form of a dark-violet, amorphous substance. This is collected on a filter, washed until all traces of sulphuric acid have disappeared, and dried at 100° C. (212° F.). The dry residue is dissolved in ether, and the filtered solution deprived of ether by distillation, when the pure coloring matter will remain behind.

Thus prepared, it is easily soluble in acetone, ether, ethylic, methylic, and amyl alcohol with yellow color; less easily soluble in chloroform, difficultly so in benzol and toluol, insoluble in petroleum ether and ligroin. Concentrated sulphuric acid dissolves it with a pure blue color. On diluting this solution with a little water, or on dissolving the coloring matter in fuming hydrochloric acid, a yellowish-red liquid results. [In the case of Liebermann's coloring matter, it is cherry-red. Under all conditions, except that mentioned above (concentrated sulphuric acid), the new coloring matter turns red with acids and blue with alkalies.]

This new indicator—which has no name as yet—is far more delicate even than phenolphthalein. As an instance, the authors quote this fact. 50 C.c. of water deprived of carbonic acid were mixed with a few drops of alcoholic phenolphthalein solution, and then titrated with $\frac{1}{10}$ normal soda solution. It required 0.5 C.c. to produce a permanent reddening. On repeating the experiment with the new indicator, only two drops of the soda solution were required to produce a blue color.

The new indicator shares with phenolphthalein the property that it is not indifferent towards carbonic acid, and is unreliable in presence of ammonia. But it is the best indicator so far known, according to the authors, for testing other alkalies, and all the alkaline earths, all mineral acids, and such organic acids as are usually determined volumetrically.—After *Arch. d. Pharm.*, 1885 [3], 23, 243.

The Quinine Outlook and Cinchona Prospects.

THE following views in regard to the future of the bark market have been written for us by an eminent authority. They are to be taken only for what they are worth, but evidently they present an intelligent idea of the conditions which now regulate the prices of cinchona:

The future of the quinine industry has of late given rise to a great deal of theoretical speculation; but those who have considered the question attentively in all its relations now believe that the trade in quinine and the cinchona alkaloids generally is about to take a new and vigorous departure, quite distinct in its aims and results from the path pursued in past times. There are and have been in operation for some time elements which have a most important bearing on the article, and will eventually abolish the violent and constant fluctuations attending its sale.

As long as manufacturers were dependent on South America for their supplies of bark, a large field was left open to speculation. The principal cause of upward movements was the unsteady political condition of the South American Republics, which furnished the supplies. The high

price of labor and the great difficulty and delay attending transportation in those countries also played their part. Against these, operating for a decline, were the discovery of new forests; for instance, those of New Granada, which in eight years supplied a total of 100,000 bales of cinchona, most of which was rich in alkaloids. At first this bark arrived in quantity, but gradually declined, and by the end of 1879 ceased entirely. In the beginning of 1880 the cuprea bark first appeared in the market, and in three years yielded 200,000 bales. This state of affairs is now changed, the South American barks being nearly altogether replaced by the East Indian kinds, which arrive in such large quantities that they alone would now nearly supply the total world's consumption. Their arrivals are regularly on the increase, and if the supply from this source should not be sufficient to cover requirements, the old stock remaining of South American can be utilized, and will certainly be more than sufficient to meet any deficiency that may arise for several years to come, or, in fact, till the arrivals of East Indian barks alone will unquestionably suffice to meet all demands. It has constantly been asserted that the shipments of Ceylon bark will decrease, and that the cultivation in most districts was not found profitable. The best answer to this is found in a constant increase of arrivals, these showing an advance of about 50 per cent since October 1st, 1884, to the present, compared with the same period in previous year. There is another important point to be noted in connection with this bark, and one generally overlooked. The percentage of quinine in the bark has been steadily increasing each year. There is, therefore, not only a larger and steady supply of bark available, but the actual yield of alkaloids from it is constantly improving, while the expense of cultivation remains the same, for the plantation costs just as much to work, whether the bark is rich in quinine or not. In the East labor is very cheap, and cost of transportation, especially in the case of Ceylon, trifling; everything therefore seems favorable for the cheap production of quinine-producing barks. It has not transpired what the actual cost price of Ceylon cinchona bark is, but there is one consideration which may throw some light on it. The twig bark which is sold in London at from 1½d. to 2d. per lb. arrived in a quantity twice as great since October last as in the same period of the years 1883-84. It may be believed that, at the prices named, this, so to speak by-product of the plantations, pays its own expenses of cultivation, collection, freight, etc.; for if it did not pay its own expenses and cost of cultivating it would probably cease to come forward. This leaves the stem bark, which averages 2 per cent of quinine and is worth 4d. per unit, or about 8d. per lb., to cost about the same as the twigs. In any case a handsome margin of profit must be left, even after a liberal deduction for general expenses, interest on capital, etc. Looking at the result of the last few years, there is every reason to suppose that the production will continue to increase.

It has been suggested that South America may again come to the front in supplying the world. It is, however, highly improbable that new forests, easy of access, and admitting of being worked cheaply, will be discovered; while the new plantations in Bolivia are yet in their infancy, and the cultivation was not carried on in a proper manner at first, and in any case it will be more expensive and cost much more for transportation than the Eastern barks.

The price will no doubt be regulated in future by the East Indian supplies.

These are now looked upon as staple products of the countries where the plantations are situated; it is natural to suppose that improvements will continue to take place in the cultivation, and eventually a regular crop may be expected with certainty—of course subject to slight annual variations as other crops are.

This will insure a steady market for the bark, and, as a consequence, quinine makers will have to be content with a narrow but steady rate of profit, such as is yielded by other manufacturing industries. The consumption will increase with low prices, but the increase in richness of the bark will probably more than counterbalance this.—*Chem. and Drugg.*

Testing Commercial Quinine for Cinchonidine.

BY DR. J. E. DE VRIJ.

ALTHOUGH the estimation of real quinine present in the commercial article may readily be accomplished, either by means of Laurent's polariscope or by converting it into herapathite, still the execution of either of these methods, in the ordinary drug-stores, is impracticable. On the one hand, the apparatus of Laurent is too expensive, and the determination as herapathite requires a preliminary experience which is possessed by but few. While I have been assured, for instance, by Mr. Naylor, of London, that he performs every week about a dozen herapathite determinations with good results, this method has recently been condemned by Shimoyana as unreliable. I propose to take up this question in the future. For the present I will only say that this method really furnishes good results, and that failures should be ascribed only to want of experience.

I have always considered it desirable to find a method which would enable the apothecary to readily determine the presence of sulphate of cinchonidine in commercial sulphate of quinine; and I have finally succeeded in discovering a very simple method, for which nothing else is required than normal sulphuric acid (containing one-half the molecular weight in grammes, or 49 Gm. of sulphuric acid, H_2SO_4 , in 1 liter), caustic soda, and ether. It is further necessary, however when comparing different samples of sulphate of quinine, always to operate under the same conditions.

The Netherlands Pharmacopoeia requires that when 1 part of sulphate of quinine is gently shaken with 20 parts of ether and 2 parts of water of ammonia, two perfectly clear layers of liquid should be formed. This condition, however, is, in my experience, even fulfilled by a sulphate of quinine containing as much as 18% of sulphate of cinchonidine, making the test nugatory. My new method depends upon the fact that acid sulphate of quinine is easily crystallizable, both from water and from alcohol, while acid sulphate of cinchonidine is uncrystallizable from water, being very soluble in this liquid. Hence, if a mixture of both sulphates is dissolved by a small quantity of water, with aid of a gentle heat, a large portion of the quinine salt will separate again, on cooling, in form of crystals, while the remainder of it, together with the cinchonidine salt, will remain in solution. The application of this fact to the test in question is made as follows:

Dissolve 5 Gm. of the sulphate of quinine to be examined in 11 cubic centimeters of normal sulphuric acid, heating to about 60° C. (140° F.). Set the clear solution aside to cool. After twelve hours a large proportion of the quinine will have separated as crystallized acid sulphate, which may, of course, be utilized as such, after being removed and dried, so that there is

but little loss of material. Pour the mother-liquid off the crystals as completely as possible, and shake it with some soda solution and 25 Gm. of ether. This causes the separation of a large proportion of the cinchonidine in small crystals floating upon the surface of the alkaline layer. If the quantity of separated cinchonidine is at all considerable, it may be collected and weighed.

On applying this method to a sulphate of quinine, which when tested optically (in form of tartrate), showed 13.2 per cent of sulphate of cinchonidine, I obtained 0.45 Gm. of this latter salt, equal to 9 per cent. And on applying it to an exceptional sulphate of quinine, which had been sent to me by a foreign manufacturer for examination, and which contained only 2.403 per cent of sulphate of cinchonidine, I still obtained—in spite of the small quantity—a separation of crystals visible with the naked eye, though so small as to forbid weighing.

This method may be made still more exact in the following manner. Take the capsule, into which the 5 Gm. of sulphate of quinine with the 11 C.c. of normal sulphuric acid are introduced, and warm it on a water-bath until the liquid becomes covered with a crystalline scum. Then let the capsule become cold, and bring it back to its original weight by adding distilled water. Remove the mother-liquid as thoroughly as possible, and treat it with soda and ether. When examining a number of different samples, it is necessary to operate upon equal quantities of mother-liquid with equal amounts of soda and ether. It will then be possible to recognize the presence of cinchonidine under all circumstances with the naked eye, and in many cases it may even be weighed, besides.

If, in addition to the above test, the quantity of tartrate is determined, which may be obtained from the quinine in question—and this varies, in the commercial sulphates of quinine [of Europe, we presume] between 90 and 93%—all data will be available for determining the value of the samples in question.—*Nieuw Tijdschr. v. d. Pharm.*, 1885, 100.

Testing for Arsenic.

VARIOUS governments have prescribed the method by which the presence of arsenic in certain articles of public comfort or use (wall-papers, etc.) is to be determined, and some of them even have established an upper limit which the arsenic under no circumstances must exceed. It happens, however, that this limit and the method of testing do not always agree, inasmuch as a very careful and expert operator will often obtain from an article far exceeding the established limit the full amount, or at least so much of the arsenic as will condemn the article, while a less skilled operator, though literally carrying out the process, will find less than the limit, and hence pass the article as salable. This discrepancy appears to have recently been noticed in Sweden, and a remedy for its avoidance has been proposed by Mr. Albert Atterberg, which will be given below.

The usual method by which arsenic is now tested for in nearly all laboratories is as follows:

1. *Preliminary Test.*—A piece of the suspected substance is put into a long test-tube with some metallic zinc and ferrous sulphate, and hydrochloric acid poured on top. Into the upper part of the test-tube a pellet of cotton saturated with alkaline acetate-of-lead solution is inserted, and the mouth of the test-tube is loosely stoppered with a cork, bearing in two notches on its inner face, strips of paper, moistened respectively with solution of acetate

of lead and of nitrate of silver. If the silver paper has not acquired a blackish or black color within twelve hours, arsenic may be assumed to be absent.

In practice, this preliminary test is often omitted. But if carefully executed, it often makes further testing unnecessary.

2. *Principal Test.*—The suspected substance is put into a flask with very long neck and placed in an oblique position, together with 1 to 2 Gm. of ferrous sulphate and hydrochloric acid of 1.190 spec. grav., and the mixture distilled. The flask is connected with a perpendicularly placed pipette, the point of which just dips below the surface of 200 cubic centimeters of water contained in a glass flask. As soon as the pipette becomes hot, the distillation is terminated.

If bronze colors occur in the suspected substance, they are brought in solution by the addition of a few grammes of solid ferric chloride.

If sulphide of arsenic was present, this becomes decomposed under the above circumstances and the arsenic distils over.

The obtained distillate is now tested as stated above under No. 1—10 C.c. being taken for a test. If arsenic is found to be present, the bulk of the distillate is saturated with hydrogen sulphide water, and after twenty-four hours, passed through a very small filter. The latter is washed with hydrogen sulphide water, and then treated for several hours with dilute ammonia—the neck of the funnel being meanwhile stoppered. The filtrate, together with the wash-water, is evaporated to dryness, the residue moistened with a little soda solution, and dried again. The dry residue is now mixed with a thoroughly dry mixture of cyanide of potassium and carbonate of sodium, and then examined by Fresenius and Babo's method—heating in a very slow and uniform current of dry carbonic acid gas, when a more or less strong arsenical mirror will be obtained if arsenic was present.

Atterberg now proposes to simplify this method in the following manner:

After the distillation has been completed, as described under 2, the distillate is mixed with nitric acid and evaporated to dryness. If arsenic was present, the whole of this remains in the residue as arsenic acid. The latter is at once recognized by dissolving the residue in water and adding nitrate of silver. If a precipitate of arseniate of silver does not occur immediately, the whole is again evaporated to dryness, when, if arsenic was present, the characteristic color of arseniate of silver will appear quite sharply.

In case organic substances should have passed into the distillate, the arsenic residue may contain oxidation products, such as oxalic acid. And if sulphur had passed into the distillate, the residue may contain sulphuric acid. These substances, however, do not interfere with the silver reaction, provided enough silver nitrate is added so that, on drying, the foreign acids are all combined with silver.—*Rep. d. Anal. Chem.*, 1885, No. 12.

Pill Excipient.

IN a short note addressed to the *Pharm. Journ.*, Mr. J. F. Brown states that he finds glucose too sticky a pill excipient, when used alone. He prefers a mixture of

Glucose.....	12 parts.
Glycerin.....	4 "
Water.....	1 part.

which answers for many purposes.

He recommends to drop this excipient by means of a drop bottle made from a thistle-head safety funnel, fitted with a cork, into a 6 or 8 oz. squat bottle, and having a piece of thin sheet rubber tied firmly over the top.

Doundake Barks.

MR. THOMAS CHRISTY, F.L.S., in No. 8 of his *New Commercial Plants and Drugs*, gives the following account of these barks (compare also AM. DRUG., 1884, p. 74):

Under this name, several barks derived from the west coast of Africa have been examined in France. One of these is identical with the bark of the root which I received in 1878 from Liberia, under the name of peach root (see "New Commercial Plants," No. 2, p. 14), and which is obtained from *Sarcocephalus esculentus* Afz., a plant belonging to the cinchona family. MM. Heckel and Schlagdenhauffen consider it to be capable of replacing cinchona bark as an astringent and febrifuge, and also regard the beautiful yellow coloring-matter contained in the bark as worthy the attention of dyers. According to these chemists, the doundake plant is found from 16° N. latitude to 5° S. latitude, from Senegambia to the Gaboon, and is known in the Sonson tongue as "dondaké," in the Toucouleur as "jadali," in the Bassa country as "dorg," and in Sierra Leone as "amelliky." They also state that the bark of certain species of *Morinda* is sometimes mixed with the doundaké bark, viz., *Morinda citrifolia*, L., *Morinda longiflora* G. Don., and a third, which has been named *Morinda Doundaké* Heckel, although Professor Oliver considers it to be only a variety of *M. longiflora* ("Flora Trop. Africa," III., p. 193). They notice certain distinctive features between the doundaké bark from Sierra Leone and that from Rio Nunez, but only such as indicated that the bark may be derived from different varieties of the same species, or of the same plant growing under different conditions.

That from Sierra Leone has a grayish, smooth surface, cracked here and there, and presenting small, hard excrescences of a darker color. When older, the bark becomes blackish, the cracks multiply, and the epidermis falls off as a reddish dust. The interior of the bark is of an ochrey-yellow, and is striated longitudinally. The liber fibres separate easily in lamellæ. The bark has a bitter taste, and when chewed, gives a yellow tinge to the saliva. The corky layer and epidermis are simply astringent. The bark from Rio Nunez is similar, but has no blackish excrescences, and the internal surface is darker yellow, the liber is more bitter, and the epidermal layer less astringent, but the anatomical structure is identical. The bitter taste is due to two nitrogenous principles of a resinoid character, which differ in their solubility in alcohol, and have the respective formulæ $C_{12}H_{15}NO_{11}$ and $C_{12}H_{15}NO_{10}$. The bark also contains a tasteless crystalline principle soluble in caustic potash, glucose, and traces of tannin. This doundaké is evidently not identical with that examined by MM. Bochefontaine, Feris, and Marcus, since MM. Heckel and Schlagdenhauffen could not find any trace of the poisonous alkaloid found by the former in the doundaké bark they had examined (*Comptes Rendus*, XCVIII., p. 272), although it was obtained from Rio Nunez. The bark examined by the former is described as being of an orange-red color, formed of superimposed lamellæ, which are easily detached from one another, and the taste as powerfully bitter. The active principle, doundakine, possesses an alkaline reaction and the same physiological action as the bark itself. It produces in the frog and guinea pig a cataleptic state, with gradual failure of the respiration, and then of the heart's action. In dogs, the cataleptic action is not evident. A poison used in the chase by the natives produces similar effects, which is believed to be due to the doundaké being employed in its manufacture. It is most unfor-

tunate that the same name should be applied to barks possessing such different properties. It is better, therefore, to retain the name of African peach root for the tonic and febrifuge bark of *Sarcocephalus esculentus*, and reserve the name of doundaké for the bark first described under that name by MM. Bochefontaine, Feris, and Marcus, and which, judging from its physiological action, is probably derived from some apocynaceous or loganiaceous tree, nearly allied to *Geissospermum*. Having sent out to the west coast of Africa for a large supply of doundaké bark (*Sarcocephalus*), I was surprised to receive yet another kind, also known under the name of doundaké, in the neighborhood of Sierra Leone. It occurred in long, thin pieces of a yellowish-brown color externally, lighter internally, with a slightly bitter taste. I sent a sample to Dr. Heckel, who at once identified it as that of the *Cochlospermum tinctorium* (see Perrotet's "Flora Senegambiæ").

In reviewing the results obtained by MM. Heckel and Schlagdenhauffen, the editor of the *British and Colonial Druggist* asked what advantage doundaké possessed over *Berberis vulgaris*; the following translation of the reply which I received from Dr. Heckel and sent to the editor, will prove interesting:

"Doundakine, which is obtained from the bark of the *Sarcocephalus esculentus*, possesses far more powerfully febrifuge and sedative properties than berberine or oxyacanthine, which are present in the root of the spine Vinette (*Berberis vulgaris*). Again, the coloring matter of doundaké is of the old gold color, so much sought after for dyeing silks, whilst berberis root gives a pale yellowish tint, without brightness or value."

I have now a supply of doundakine under preparation, and hope that it may be tested in this country, both therapeutically and commercially.

German Analyses of English and American Meat Extracts.

A. STUTZER, of Bonn, has published in the *Berliner Med. Wochenschr.* for April 15th, the results of an examination of nine preparations, including Murdock's liquid food, Valentine's meat juice, Johnston's fluid beef, Benger's peptonized beef jelly, Savory & Moore's fluid beef, Brand & Co.'s essence of beef, Reed & Carnrick's beef peptonoids, and Kemmerich's and Liebig's beef extracts, the first four being American, the next three English, and the last two German.

He first determined in each the proportion of organic matter, salts, and water, and then further treated the organic substances. In doing the latter, he determined how much of the nitrogenous matters belonged to the easily digested albumin and pepton. He lays special stress upon these last, because on them the nutritive value of animal food depends. Two preparations, Carnrick's beef peptonoids and Johnston's fluid beef, contained albuminous substances in the form of fibrin, not soluble in water, of which the value must be determined by artificial digestion, since in this way only can be ascertained what proportion of the fibrin can be digested. He further noted the nitrogen in the shape of flesh bases, kreatin, carnin, etc., since these, with the potash and phosphoric acid associated with them, play an important rôle as food and stimulus for the nervous system.

The flesh extracts of Kemmerich and Liebig are chiefly used for healthy men, but are nevertheless recommended to convalescents to improve digestion and stimulate the circulation, results which are accomplished partly through the abundant flesh bases and partly through the phosphate of pot-

ash. This is in accordance with Liebig's own view, which did not claim for his extract any active nutritive power, but recommended it simply as a relish. Kemmerich's flesh extract contains a larger proportion of pepton and albumin, namely, 22 per cent, and he claims correctly for it the properties of a true nutriment, as well as a nervous stimulant.

Murdock's liquid food, which is an extract of beef, mutton, and fruits, made in Boston, is claimed to have 13½ per cent of soluble albumin, which Stutzer has confirmed. The fluid contains 8.3 per cent of alcohol, and on opening the well-sealed vessel the odor was not pleasant, and there seemed to be a partial decomposition of the contents, a tendency to which characterizes albuminous fluids if long kept, especially if they contain fruit juices prone to fermentation.

Valentine's meat juice, made at Richmond, Va., is also a fluid which contains kreatin, potash, and phosphoric acid along with a small quantity of albumin and peptone, and 59 per cent of water.

Johnston's fluid beef, made in Canada, belongs, on account of its containing peptons and digestible albumen, to the better extracts, although the proportion of water is large, being 50 per cent. Stutzer found still more water, nearly 90 per cent, in Benger's peptonized beef jelly and Brand's essence of beef, of which the first is made in Manchester, England, the second in London.

The fluid meat—peptonized meat—of Savory & Moore possesses, according to Stutzer, very different properties. It contains chlorides in considerable amount, and is apparently made with hydrochloric acid in order to peptonize the meat, the acid being neutralized with sodium carbonate. In this method of peptonizing, with the aid of acids, Stutzer considers that the action proceeds too far and that the pepton resolves itself into substances the nature of which is not precisely determined, but which probably do not possess the same nutritive value as pepton.

Essentially different from any of the above is the preparation known as beef peptonoids, made by Reed & Carnrick, of New York. It is a very fine, dry powder, made of beef, gluten of wheat, and condensed milk, a mixture, therefore, of nitrogenous matters of animal and vegetable origin, and is easy of digestion. The gluten is carefully separated from other organic matters of wheat and contains only 1.25 per cent of starch, and 0.25 per cent of cellulose.

The determination of the nutritive value of these preparations can best be made by comparing the easily digestible albumin and pepton in the different preparations. In such a mode of comparison, the most nutritious will be found to be Reed & Carnrick's beef peptonoids, of which 100 parts by weight contained the same amount of albumin and pepton as 178 parts of Johnston's fluid beef, 285 of Kemmerich's flesh extract, 482 of Murdock's liquid food, 745 of Brand & Co.'s essence of beef, 764 of Savory & Moore's fluid meat, 898 of Liebig's flesh extract, 902 of Benger's peptonized beef jelly, and 966 of Valentine's meat juice.

Reed & Carnrick's preparation contains, in addition to the nitrogenous matter, 10.67 per cent of fat, and 10.02 per cent of soluble non-nitrogenous matters in the shape of dextrin and sugar.

In the comparison, says Stutzer, Liebig's extract takes a subordinate position, because it is found to be only an appetizing, and not a nutritious substance. If, on the other hand, the comparison is made as regards the flesh bases contained in them, it is found that 100 parts by weight of Lie-

big's extract contain the same amount of nitrogen in the form of kreatin and carnin as 126 of Kemmerich's meat extract, 537 of Valentine's meat juice, 558 of Johnston's fluid beef, 1844 of Bengers's peptonized beef jelly, 4161 of Murdock's liquid food, 5053 of Brand's essence of beef, and 7782 of Reed & Carnrick's beef peptonoids.—*Medical News.*

The Determination of Ethyl Nitrite in Spirit of Nitrous Ether and Kindred Preparations.

(Continued from p. 138.)

WHEN strictly accurate results are not required, the volume of gas need not be corrected for variations of pressure, temperature and tension of aqueous vapor, and if these considerations be omitted the calculation is much simplified. Thus, if 0.030 Gm. of nitric oxide (representing 0.075 Gm. of $C_2H_5NO_2$) under the ordinary conditions of pressure and temperature be taken to measure 23.55 C.c., then the

Volume of gas in C.c. \times 0.3185 divided by the Measure of sample in C.c. \times density of sample equals the percentage, by weight, of $C_2H_5NO_2$.

If the density of the sample be omitted from the equation, the result will be the number of grammes of ethyl nitrite per 100 C.c. of the sample. The nitrometer method has been proved to give very good results with pure sodium nitrite (prepared from silver nitrite) employed in like amount. The results with spirit of nitrous ether are somewhat higher than those given by

As the sample at the time of examination had a sensibly acid reaction, indicating slight decomposition, I believe the corrected result to express with considerable accuracy the actual composition of the sample. Another solution of ethyl nitrite in absolute alcohol which I have had for upwards of seven years still contains a notable quantity of nitrous ether.

No. 2 sample was the ordinary commercial B. P. article, prepared by Messrs. Rimmington & Son, of Bradford. It gave 1 per cent of ethereal layer by the chloride of calcium test.

Nos. 5 and 6 were analyzed immediately on opening the bottles, as freshly sent out by the wholesale house, which is one of the first reputation. I have analyzed them again, after an interval of a month, and find that 5 C.c. yielded respectively 14.4 and 22.3 C.c. of nitric oxide, measured at the ordinary temperature of the laboratory. Hence they were practically unchanged, though kept in a warm room. I have also employed the process for the assay of a considerable number of other commercial samples, and it has given me every satisfaction.

The nitrometers commonly sold are furnished with three-way taps, but for the purpose in question this is unnecessary, an ordinary tap being sufficient. A nitrometer tube which I have had made for me holds 50 C.c. The cup is narrow and cylindrical, and has marks at 5 and 10 C.c. above the tap. This arrangement renders the use of a pipette or other separate measuring arrangement unnecessary, as the cup can be filled to the 5 C.c. mark with

whole procurable gas was evolved. Hence a sample which, by decomposition, contained free acetic acid, would evolve nitric oxide, though no nitrous compound other than ethyl nitrite was present.

With regard to Dott's titration process, if the treatment with potassium iodide be effected in an open basin in presence of air, the amount of nitrite found is liable to be seriously in error; but if air be excluded, Dott's method gives fair approximate results, somewhat in excess of the truth. The process can be advantageously employed on the solution which has already been decomposed with potassium iodide in the nitrometer. The nitric oxide is allowed to escape into the air, and the brown liquid is washed into a basin, and at once titrated with decinormal thiosulphate. 1 C.c. of this solution (containing 24.8 Gm. of crystallized $Na_2S_2O_3$ per liter) will react with the iodine liberated by .0075 Gm. of ethyl nitrite.

The results obtained in this manner show a constant difference of about 0.005 Gm. of nitric oxide above that corresponding to the volume of gas liberated in the nitrometer, the true amount doubtless lying between the two. The difference is most probably due to a small amount of nitric oxide remaining dissolved in the aqueous liquid, which causes the volume of gas to be slightly low, and becoming oxidized to nitrous acid during the subsequent titration, liberates a small additional amount of iodine. This source of error becomes very serious if the bulk of the nitric oxide be not previously removed, as is done in the nitrometer. Thus if an attempt be made to determine ethyl nitrite by adding the sample of spirit to an acidulated solution of potassium iodide contained in an open basin, and immediately titrating with standard thiosulphate, the first result is too low, owing to the nitrous ether requiring a sensible time for its decomposition. In a few minutes this error is more than compensated by the additional amount of iodine set free by the nitrous acid, produced by the action of the air on the nitric oxide formed in the primary reaction, and this liberation of iodine goes on so rapidly that the stirring necessary to mix the standard solution with the liquid in the basin causes the solution again to acquire a yellow tinge which rapidly deepens. If the liquid in the basin be allowed to stand for some time exposed to the air before titrating, as recommended by Dott, the iodine set free often amounts to fully twice the quantity primarily liberated by reaction with the ethyl nitrite present.

I have to thank Messrs. Dott, Dymond, Leech, MacEwan, Rimmington Williams, and others, for information and samples connected with my experiment, and Mr. J. H. Worrall for assistance in the manipulations.—ALFRED H. ALLEN in *Pharm. Journ.*, Feb. 21st, 1885.

Deelina Oil, made by the Dee Oil Company, on the River Dee, in England, was recently spoken of by Dr. John Roberts, of Chester, as a local application in eczema when the acute stage has passed. The surface is to be bathed before the application with warm bran-water or oat-meal water. Its source is not mentioned, but is said to be clean, without odor, does not become rancid, and leaves little or no greasiness after its application.—*Practitioner.*

Polyporus Senex, a gigantic species of agaric found on the coast of Chili, has been used by Grossi as a styptic and to arrest night sweats. For the latter purpose, he combines 3½ grains of the drug with 15 grains of sodium bicarbonate, 3 oz. of distilled water, and 75 grains of gum arabic, giving a tablespoonful at night.

	Volume of NO from 5 C.c.	Weight of NO from 5 C.c.	$C_2H_5NO_2$.
	C.c. (390 from 0.5 C.c.)	Milligrammes.	Per cent.
1. 25 p. c. sol. in absolute alcohol (2 mos. old).	39.4	50.4	2.98
2. Spt. nitrous ether B. P. (2 months old).	27.0	34.6	2.63
3. Spt. nitrous ether B. P. (age unknown).	34.8	44.3	2.62
4. Spt. nitrous ether B. P. (age unknown).	14.7	18.8	1.10
5. "Spt. ether nit. .850" (new).....	22.0	28.2	1.56
6. Sp. "æther nit dulc. .900" (new).....			

Eykman's method, the difference being least when sodium chloride is employed in the latter process, and time given for the ferrous solution to react thoroughly on the solution of ethyl nitrite. The results by the iodide method are almost certainly more accurate than those by Eykman's process. With most specimens of sweet spirit of nitre, a considerable amount of nitric oxide is produced (and iodine liberated) before adding the acid, the reaction probably depending on the presence of free acid in the sample. The results obtained in the nitrometer are remarkably constant, and the method furnishes a very easy means of assaying sweet spirit of nitre with considerable accuracy, which is further increased if a correction of 1.5 C.c. (= 0.0048 gramme of $C_2H_5NO_2$) be made for solubility of the gas. The process has the advantage of great ease and rapidity, and actually measures the nitrous compounds present in the sample, instead of leaving their proportions to be inferred from a more or less complex reaction, such as the reduction of permanganate, etc. The following results were obtained by me from six typical samples: No correction was made for pressure or solubility, the figures representing the actual volumes of gas measured at about 15° C.

No. 1 sample was prepared by Mr. J. Williams, by dissolving one part by weight of carefully purified ethyl nitrite in three parts by weight of absolute alcohol. The density was .8387. With corrections for solubility, pressure, and temperature, the ethyl nitrite shown by the process in this specimen came to nearly 24 per cent.

the sample, and thus a definite amount taken for the analysis.*

With the aid of such a nitrometer, the assay of the spirit of nitrous ether for ethyl nitrite and other nitrous compounds, is reduced to an operation of the utmost simplicity, and literally does not require more than ten minutes for its completion, including the necessary calculation. The results are as constant as can be desired, and the process as near an approach to accuracy as is required for ordinary purposes. I believe it will afford the pharmacist or medical man a valuable means of assaying his sweet spirit of nitre, requiring, as it does, no out-of-the-way reagents or even a standard solution.†

In the course of the experiments made in testing the foregoing process, in many instances I observed the amount of nitric oxide set free simply by agitation with iodide of potassium without any acid being added. It might be supposed that the gas given off at this stage of the process was that derived from the free nitrous acid of the sample; but I do not think this is strictly the case, as in experiments in which acetic acid was substituted for dilute sulphuric acid, nearly, if not quite, the

* Messrs. Cubley & Preston, of High street, Sheffield, are now prepared to supply these nitrometers to those desirous of employing the process mentioned in the text.

† The use of brine in the nitrometer instead of mercury renders the manipulation more simple, without appreciably affecting the accuracy of the results. The nitrometer itself may be extemporized from an inverted Mohr's burette, to the nose of which a short, wide glass tube has been fitted by means of a perforated cork. The open end of the burette is also fitted with a cork, through which passes a short length of glass tubing which is connected by narrow India-rubber tubing with a wide glass tube or funnel to serve as a reservoir.

Munra: A Costarican Drug Reputed to Produce Sterility in Women.

DR. H. POLAKOWSKY is the author of an interesting article (in *Petermann's Mittheilungen aus J. Perthes' Geograph. Anstalt*, 1885, 214) on the latest explorations of certain remote territories in Costarica, made by Dr. Thiele.* One portion of this paper, which is of interest medicinally, is given here in translation:

"Second journey to Talamanca, September and October, 1882. The bishop this time went by the way of Limon up to the mouth of, and then up the Sixsaula river, passing by the way of San José de Cabecar and Uruchico ('Oruchika on Gabb and Petermann's map of Costarica'), in a north-eastern direction, until he reached the small settlement Estrella, whence he descended by boat to the Atlantic Ocean, and returned to Limon. During this journey the dialects of Cabecar and Estrella were studied, and some 700 Indians were baptized. One of the caziques of the Cabecar Indians made an attempt to poison the bishop and some of his companions, which resulted, however, only in the death of a Baruka Indian. During this journey the bishop was accompanied by a Swedish zoologist, professor at the University of Upsala, who made valuable collections. . . . In a letter addressed to Dr. Polakowsky by Bishop Thiele (dated from San José, December 14th, 1883), the latter writes as follows: "The Indians have great respect for me, and willingly give me all information, though they refuse it to others. Inclosed I send you a great rarity. The Indians of the Talamanca possess a powder which causes sterility in women. It is owing to the use of this powder that these tribes have become so much reduced in numbers. Young and vigorous women often have no children at all, while others have six or eight. Upon investigation, I discovered the reason. Dr. Gabb had also heard of this powder, but could not obtain any of it from the Indians. During my last visit, the cazique gave me a small quantity of it. In order to learn whether it was the genuine article, I showed it on various occasions to different Indians, and all attested its genuineness. Regarding its source, they stated without exception that it is obtained from the fruit of a shrub which is only found along the steep banks of the river of Terraba ("Rio Grande de Terraba" of the charts). The Indians approach the places in canoes and pull the shrubs down with long hooks. Three species of this shrub are distinguished by the Indians. One is called *munra betsei* (yellow munra); this is inert. Another is *munra dorona* (red munra), likewise inert. And the third is *munra tsetsei* (green munra), which is the kind possessing the above-named effect. [Perhaps it is the same plant or fruit, at different stages of development or at different seasons?] Dr. Polakowsky assumes that these colors do not refer to the plant or its flower, but to its product, the powder. During my next journey I will collect the fruits, leaves, etc., of this shrub for you."

"Unfortunately, the bishop has been prevented from keeping this promise by the sudden interruption of his career. Concerning the powder (the author continues), it is called *munra* by the Indians. The sample sent me by Dr. Thiele consisted of a greenish-gray powder, without odor or taste, crepitant like sand, of a resinous appearance, which was only partly soluble in alcohol, but almost completely in dilute potassa solution. I think it

is a resinous exudation found upon the fruits or stems of a plant. The alcoholic solution, when evaporated, yielded a residue, which when examined under the microscope, was found to consist of [to contain?] shining, white, needle-shaped crystals. Unfortunately, the quantity received was too small to hand it over to a chemist. The sample received bore the label 'munra tsetsei.'

Being asked by the author to send him a larger sample, Dr. Thiele wrote to him from San José (under date of April 10th, 1884) as follows: "Concerning the *munra tsetsei*, I shall today write to the cazique of the Talamanca to send me a sufficient quantity. I shall receive an answer in two months, since only one messenger is dispatched each month. I shall also inform him of my wishes respecting samples of the plant, fruit, etc. We must exercise patience, however, since the Indians made only one journey, during the year, to Terraba and Boruca, for the purpose of fetching the *munra tsetsei*, about which there is otherwise much secrecy observed. Nevertheless, I shall eventually manage to procure it."

[We are pretty sure that the alleged specific action of this drug will turn out, when examined, to be either altogether imaginary, or that it will at least only be an abortifacient, of which there is already a considerable number known. Its value, therefore, will probably be but of a negative character. Were it at all likely that the drug possessed the effect attributed to it, it would have been better had no information concerning it ever been furnished outside of the tribes at present using it.—ED. AM. DRUGG.]

A new Test for Sugar in Urine.

Grocco recommends the following: Pour 40 parts of the urine on a mixture of 2 parts of phenylhydrazin and 3 parts of acetate of sodium, heat in a water-bath during 20 minutes, let settle for half an hour, and examine the sediment under the microscope. If grape-sugar was present, fine yellow crystals of phenylglycosazon will be formed, which are easily detected in dilute solutions. The reaction is said to be reliable, and not disturbed by other constituents of the urine.—*Analisi di Chim.*—*Arch. d. Pharm.*

Hydriodate of Hyoscine.

This is a recent addition to the list of chemicals manufactured by E. Merck. It is a very energetic mydriatic which is said to have the advantage that its effects pass away very rapidly. But it is so expensive (1 Gm. about \$7.30 at the manufacturer's) that it is not likely to be much used. It is prepared, by a very circuitous process, from the amorphous hyoscyamine, and appears in form of yellowish crystals, easily soluble in alcohol, less so in water. Its composition is $C_{17}H_{21}NO_4$. $HI. \frac{1}{2} aq.$

Tinning Boilers.

THE boiler to be tinned is first thoroughly freed from oxide, and scoured perfectly bright. It is now coated with a solution of chloride of tin (stannous chloride) containing about 10 per cent of the salt, to which a small quantity of pure cream of tartar had been added. The wet surface is next rubbed with coarsely powdered zinc, such as is obtained by powdering zinc at the moment of its congelation after melting. (The ordinary zinc powder or dust of the market answers equally well.) This method may be used upon brass, cast and wrought iron, and steel. The coating of tin is quite thin, but a thicker coat may be produced by repeating the process. The surface is finally washed and then polished in the usual manner (with chalk, etc.).—*O. W. in Pharm. Zeit.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,536.—Jeannel's Multiple Antidote (B. B. B.).

This is prepared as follows:

	Parts.
Sulphate of Iron, cryst.	139
Sodium Sulphide, cryst.	110
Calcined Magnesia.	29
Distilled Water.	710

Dissolve the sulphate of iron in 110 parts of distilled water, with the aid of a gentle heat, and the crystallized sulphide of sodium in 600 parts of the distilled water. With the latter mix the calcined magnesia intimately, and then add the solution of iron to the mixture. There will be produced sulphide of iron (no free ferrous sulphate or alkaline sulphide should remain behind), sulphate of sodium, a little sulphate of magnesium and oxide of iron, together with a large excess of magnesia. We have, therefore, in this case, three powerful antidotes combined, namely, sulphide of iron (which acts as a reducing agent), oxide of iron and magnesia, besides two purgative salts, sulphate of sodium and of magnesium. The compound must be kept from contact with air. It is given in large doses in all cases of poisoning by metallic agents, hydrocyanic acid, cyanides, etc.

On the other hand, it is inert in the case of arsenical or alkaloidal poisoning. (After *Formulaire pharm. des hôp. mil.*)

No. 1,537.—Analysis of Iron Ore (F. J. P.).

This correspondent thinks he has discovered a source of wealth in a supposed inexhaustible supply of iron upon ground belonging to him. He has made several cursory analyses of the ore, determining the latter by titration with permanganate, but finds that his results differ, probably because he has not succeeded in getting all the iron in solution.

It would be impossible here to give a long and elaborate description of the methods of iron-ore analysis, for which we must refer our correspondent to the works of Fresenius and others. But there has recently been published a paper by Walther Hempel which contains important improvements not yet mentioned in those works. This improvement facilitates the complete solution of the iron ore greatly, and will be of use to quite a number of our readers.

It is well known that, when ores containing ferrous iron are ignited or roasted, by themselves, in contact with the air, ferric oxide is never produced, but only the intermediate ferrous-ferric oxide, differing somewhat according to the temperature used. At very high temperatures, ferric oxide even loses some oxygen, and is reduced to the intermediate stage.

The behavior of the oxide is, however, entirely different when lime is present. In this case, ferric oxide alone is obtained, and any silicates present are at the same time decomposed. Still better is a mixture of lime and a little carbonate of sodium. In place of lime, magnesia may also be used.

* Dr. Bernhard August Thiele was born April 1st, 1850, at Elberfeld, Germany, was ordained priest at Paris in 1874, and Bishop of Costarica in 1880. On July 18th, 1884, he was expelled from the country by order of the government because he protested against the establishment of public schools without obligatory religious instruction.

Iron ores ignited in this way may be dissolved with the greatest ease, inside of a few minutes, in hydrochloric acid. The *modus operandi* is as follows:

About 0.3 Gm. of an air-dry sample of the very finely powdered ore is intimately mixed, in an agate mortar, with about 0.4 Gm. of soda (free from iron), and then with about 2 Gm. of precipitated calcium carbonate (also free from iron). The mixture is put in a platinum crucible and ignited with free access of air. On cooling, the cake may be easily removed, with a glass or porcelain spatula, to a wide-necked flask, any still adhering fragments dissolved with strong hydrochloric acid and added to the contents of the flask, which are then dissolved by boiling a few minutes.

For further details, which are of less interest to the general reader, we refer to the original, *Ber. Deutsch. Chem. Ges.*, 1885, 1130.

No. 1,538.—Transparent Cement for Porcelain (J. S.).

A formula recently recommended in the *Polyt. Notizbl.* is as follows:

Dissolve 75 parts of cut caoutchouc in 60 parts of chloroform, add 15 parts of mastic and macerate in the cold, until the whole is dissolved.

No. 1,539.—Toilet and Medicated Soaps (N. V.).

As a rule, it will be found most economical to purchase such soaps from the manufacturer, or to get him to prepare them after a given recipe, rather than to attempt their preparation on a small scale. Nevertheless, we will give a few formulæ, taken from a series published some time ago in the *Seifenfabrikant* which are quite easy of execution:

1. Transparent Soap with Glycerin.

Tallow (free from acids).	37 parts.
Butter or Lard.	37 "
Cocoa-nut Oil.	16 "
Talc.	4 "
Soda Lye, 30° B.	45 "
Glycerin.	13 "

Mix the talc with the oil previously heated. When the temperature is at 113° F., the lye is added and thoroughly stirred so that a soap is formed. Cocoa-nut oil is usually saponified at a comparatively low temperature, because (unless first-class Cochin cocoa-nut oil is used) the resulting soap would acquire a disagreeable odor by heating.

The soap is scented by adding to every 5 pounds of it 8 grammes of the following mixture:

Oil of Bergamot.	130 parts.
" " Portugal.	70 "
" " Bitter Almonds.	30 "
" " Vetiver.	5 "

It may be colored with uranium orange. When completely set, it is cut into suitable pieces, or may be pressed in moulds.

2. Transparent Soap without Glycerin.

Cocoa-nut Oil (Cochin).	100 parts.
Tallow	120 "
Castor Oil	70 "
Soda Lye, 36° B.	156 "
Sugar.	40 "
Water	50 "
Alcohol, 96%	80 "

Melt the oil, strain it through a cloth, cool to 167°–176° F., and then add the lye. When the soap is formed, add the sugar dissolved in water, at a temperature of 130° F., and afterwards the alcohol. Now add a "filling" prepared from

Sugar	12 parts.
Common Salt.	12 "
Potash.	12 "
Water	40 "

very slowly, and, taking care that no turbidity is produced in the soap, allow to cool to about 113° F., perfume and pour into moulds.

3. Another, without Glycerin.

Cocoa-nut Oil (Cochin).	50 parts.
Stearin.	31 "
Castor Oil.	12½ "
Soda Lye, 35° B.	78 "
Sugar.	80 "
Water	60 "
Alcohol, 90%	52 "
Resin (bright - yellow, "French").	20 "

The oil, stearin, lye and sugar solution are combined as before; the alcohol is then added, and heat applied. When the temperature has reached about 180° F., the heat is withdrawn, and the resin added in fine powder. The mixture is once more heated, short of boiling. Finally, the soap is allowed to stand quietly for half an hour, then strained and perfumed with oil of geranium, or other oils.

No. 1,540.—The Unit of Value of Cinchona Barks (M.).

Cinchona bark is always bought and sold on the basis of its richness in quinine, which is determined by assay. The seller, whether a private dealer or agent for foreign planters or for government, has careful assays made of the different lots, which are of course almost in all cases verified or controlled by assays made on behalf of the intended buyer or bidder. When the sale is about to take place, supposing it to be an auction, each bidder knows what amount of quinine he can expect to extract from a particular lot of bark—and some, who have special advantages in skill, experience, and apparatus—may even know beforehand that they will get more valuable products out of the bark than the assay of the seller's chemist would have justified them to expect. They are, therefore, prepared to give a little more, per pound, than some of the other bidders. The purchases are made at so much (in London, shillings and pence) per pound.

When we hear of 1s. 6d., or 2s. 3d., or 2s. 9d., or 3s. 10d., etc., being paid for bark, this does not convey to us any intelligence whether the higher or lower price is due to speculation, or to the ratio between supply and demand, or to the richness of the bark. In order to establish a trustworthy and uniform measure by which the fluctuations of the bark market may be followed, a conventional unit has been established, which is the resultant between a known value—the percentage of quinine—and a variable value, namely, the general condition of the market. To state it briefly:

The unit of the value of Cinchona barks is the amount paid for the quinine contained in 70 grains of the bark, or, in other words, for the quinine contained in 1 per cent of a pound (7000) grains of bark.

This unit being known, the pound price of bark is found by merely multiplying it with 10.

In England, the unit is expressed in pence.

If the unit is, for instance, 3d., the bark should cost 30d., or 2s. and 6d. per pound. If it is 5d., 1 pound of bark costs 50d., or 4s. and 2d., etc.

No. 1,541.—Liquid Shoe Dressing (L. P. K.).

It is impossible for us to insure that the product prepared after any formula given by us will be identical with or "equal to" that put on the market by a special manufacturer, who keeps his process secret. As a rule, if anyone discovers an excellent working formula for a salable preparation, he tries to make money out of it, and instead of publishing its mode of preparation, he keeps it as secret as possible. Only in exceptional cases do these really good formulæ leak out.

This is more especially the case with products of a technical character, many of which it is difficult or altogether impossible to analyze.

Having premised these remarks, we append two formulæ, which we must leave to our correspondent to try:

Borax.	2 oz.
Shellac, in powder.	6 oz.
Water.	2½ pints

Dissolve the shellac in the borax and water, by heating a few hours on the water bath. When cold, strain. In order to render it more pliable, add a little glycerin.

It may be colored *black* by nigrosine; *red*, by eosin or fuchsin; *blue*, by some of the aniline blues (methyl-blue); *green* by malachite, or methyl-green; *violet* by methyl-violet, etc.

Or it may be colored black by logwood ink.

The following is also taken from our files:

Glue, 4 oz.; logwood chips, 8 oz.; powdered indigo, 2 drachms; potassium bichromate, 4 drachms; tragacanth, 4 drachms; glycerin, 4 oz.; water (soft), 1 pint; vinegar, 2 pints. Macerate the logwood chips with the vinegar in a closed vessel for several days, then heat to near boiling and strain. Soak the glue in one-half of the water, then melt it, add the glycerin, and the finely-powdered indigo. Dissolve the bichromate of potassium in the remainder of the water and add it to the logwood-vinegar. Raise this to boiling, add the glue solution, avoiding the access of daylight. Then strain and transfer the product to bottles of dark amber glass. When this "dressing" is applied to any surface, and the latter exposed to daylight, the bichromate and gelatin will make an insoluble compound.

No. 1,542.—Linaloe (W. H. R.).

An essential oil of linaloe was first offered in the London market in 1865, but the importers, as Mr. Piesse relates in his work on the "Art of Perfumery," were unwilling to give any information about it. This at first caused doubts as to its being a genuine production. Mr. Piesse's extremely well-trained powers of scent, however, convinced him that it was a natural production. Owing to meeting the word *linaloe* in the Scriptures, he supposed it might be identical with the odoriferous wood mentioned there; but as the true Biblical linaloe is from *Aquilaria Agallocha* of South-eastern Asia, and the new linaloe was asserted by the importers (Messrs. Sargent & Co.) to come from Mexico, the latter necessarily was derived from another source. Samples of the wood were then procured from Vera Cruz, and being submitted to the authorities at Kew Gardens, were quickly pronounced to be the *Bois de Citron du Mexique* [or *Bois de Rose femelle*], so named by Guibourt, but which in Mexico is known by the name of linaloe.

The essential oil of linaloe is perfectly white in color; it appears to be very unalterable by the action of air; and it is here that it differs so much from any of the citron group of odors, but to which it nevertheless belongs by fragrance. It so much resembles the sweet odor of the lime-tree flowers that, when properly diluted with alcohol, and with the addition of a little oil of rose, it makes an excellent imitation perfume of lime blossoms (*Piesse*).

Collins, in 1869, examined the wood, and published a paper on the subject in the *Pharm. Journ.* (April, 1869). He referred, in his paper, to an account of the substance given in a Mexican treatise on the native materia medica, where it is supposed to be derived from some species of *Amyris*. It is now known to be derived from *Amyris Linaloe* La Llave (= *Elaphrium aloëxylon* Sch.), a tree belonging to the natural family Terebinthaceæ, and growing in the hot valleys of the western slopes of the Cordilleras

of Mexico. A fine exhibit of this "bois de rose" was displayed at the Centennial Exhibition, in 1876, by Mr. Delpech, of Cuantla, Morelos, Mexico.

As the Mexican pamphlet above mentioned is quite rare (its title is: *Ensayo para la Materia Medica Mexicana, arreglado por una comision . . . de esta Capital* . . . Sm. 4to. Puebla, 1832), we will translate the article referring to linaloe from the copy in our possession:

Lignoaloe or *Linuanué* (*Amyris*).

Is produced abundantly in the Misteca and the vicinity of Matamoros. From the information which could be collected, and some seeds that were received, the plant probably belongs to the genus *Amyris*. Its wood is light, of a yellowish color, with more or less darker yellow veins through the interior, of a very aromatic odor, especially when rasped or reduced to shavings, the odor resembling that of rhodium, for which it is often substituted in the drug-stores. Its essential oil has a rather agreeable odor, and for this reason it is used in perfumery.

No. 1,543.—Kola Nuts (F.).

Kola nuts may be obtained from any of the large wholesale houses in New York City. They are quoted at about \$2 per pound, but might probably be obtained much cheaper in quantities. A fluid extract is not yet quoted on the price-lists we have lately consulted, but it will be an easy matter for you to prepare one yourself.

No. 1,544.—Pao Pereiro (D. D. S.).

In reply to the query of this correspondent, we can do no better than to quote the following from Thos. Christy's *New Commercial Plants and Drugs*, No. 7 (1884), page 66:

The *Pao Pereiro* (*Geissospermum laeve* Baillon; nat. ord. *Apocynaceae*) is a native of Brazil, and the bark of the tree has been extensively used by physicians in that country since it was first introduced to the notice of the medical profession in 1830, by Prof. Silva, as a valuable febrifuge and antiperiodic, and is still in great favor with Brazilian physicians. The bark is also known under the name of *Pignaciba* and *Canudo amargoso*. The active principle of the bark was first extracted by Santos in 1838, and was called by him *pereirine*. More recently, however, M.M. Rochefontaine and De Freitas have proposed the name of *geissospermine* for it. This alkaloid is contained also in the leaves in less quantity. It produces poisonous effects when given to small animals, two milligrammes causing the death of a frog, a centigramme similarly affecting a full-grown guinea pig, and fourteen centigrammes completely paralyzing a small dog. The symptoms produced were a slackening of the cardiac beats, and of the respiratory movements. The voluntary movements were first paralyzed, then the reflex movements. The sensitive nerves remain unaffected as long as the motor nerves and the muscular contractility are not affected. It is therefore supposed that *geissospermine* acts by destroying the physiological properties of the central nervous gray matter. Dr. O. Hesse, who has further examined the bark, found at least two alkaloids in the bark, one of which is very easily soluble in ether, and corresponds best with the alkaloid first obtained, for which he retains the name of *pereirine*; and the other with difficulty soluble in ether, and to which he gives the name of *geissospermine*. *Pereirine* is a white amorphous powder, and appears to be the most abundant alkaloid in the bark. It is colored red by strong nitric acid, and violet-red by pure sulphuric acid. *Geissospermine* forms small white prismatic crystals, truncated at both

ends, is readily soluble in alcohol, but nearly insoluble in water and in ether. It is freely soluble also in acids; if reprecipitated from such solutions by ammonium or sodium hydrate, the precipitate, at first flocculent, speedily becoming crystalline. Strong nitric acid dissolves *geissospermine* with a purple-red color, which remains for some time at the ordinary temperature, but, if heated, the color immediately disappears, passing into orange-yellow. Pure concentrated sulphuric acid dissolves it without coloration, but after a few seconds the solution becomes bluish, afterwards blue, and at last again pale.

No. 1,545.—Gelatin Bougies (Monad).

We do not know the mode of preparation of the special gelatin bougies mentioned by you. But we can tell you, in a general way, how medicated gelatin bougies are made.

Gelatin, best white. 3 parts
Water, cold. 1 part
Glycerin. 6 parts

Soak the gelatin in the cold water; when it is entirely soft, add the glycerin and melt the whole together. Any medicinal ingredient to be added may either be dissolved in the water before the gelatin is soaked in it; or, if it is not readily soluble, it may be incorporated with the glycerin; or, it may be added to the finished mass before it sets. A series of glass tubes are kept on hand, of an internal diameter of about three to six millimeters, or of such a diameter as has been demanded for the bougies, the interior of the tubes is oiled by passing a pellet of oily cotton through it, and the tubes, which must be previously heated, are then filled by suction. It is not so convenient to fill them by pouring the mass in above, as it is apt to be full of air-holes. A small piece of rubber, with a pinch-cock, may be attached to the upper end, so that when the tube is full the pinch-cock may compress the tube, and the contents will not sink back when the mouth is removed from the orifice. The tubes are then removed, the point of the finger being first pushed under the lower orifice, the latter is stoppered, and they are then set aside to cool. When cold, they may easily be pushed out by means of a rod, best preceded by a pellet of cotton, so as to fill out the calibre of the tube. The bougie is then cut into suitable lengths.

Hager gives the following proportions:

Gelatin. 1 or 3 parts
Water. 1 " 2 "
Glycerin. 6 " 21 "

The proportion of glycerin, however, is here much too large to produce bougies of sufficient elasticity.

No. 1,546.—Bromo-Chloralum (U.S.)

We find the following formula on our files:

Alum, in coarse powder. 2 pounds
Boiling water. 4 pints
Water of ammonia. q. s.
Hydrochloric acid, common. q. s.
Bromine. 1 oz.
Water q. s.

Dissolve the alum in the boiling water. Add 5 gallons of cold water, and mix well; then precipitate with water of ammonia, until a slight excess of free ammonia is present in the liquid. Allow to settle, pour off the supernatant solution of sulphates of ammonium, etc., and wash the precipitate twice with cold water by decantation. Then transfer the precipitate to a muslin strainer, allow to drain, transfer it to a suitable vessel, add the bromine, and cover it air-tight. Afterwards add enough hydrochloric acid, in small quantities at a time, to dissolve the precipitate, and then

enough water to make the product measure 1 gallon. Finally filter.

No. 1,547.—Micro-chemistry and Micro-botany (L. and others).

Besides Wormley's *Treatise on Micro-chemistry*, just issued in second edition, there is no work known to us which is specially devoted to the study of the behavior of chemical substances towards tests or towards solvents under the microscope. There are, however, numerous works in which fragmentary portions of this field of study are treated, not to mention general works on the microscope (see below), some of which devote more or less space to it.

The only other work specially devoted to a similar subject is the little treatise of Poulsen on *Botanical Micro-chemistry* (translated from the Danish, published by Cassel & Co., Boston), which does not, however, confine itself to the reactions of chemical individuals, but teaches the method of identifying or separating structural elements in plants by means of reagents.

To a small extent this field is treated by other works, but by none so thoroughly as by this.

Among works on "Micro-botany," to use this term, there is a large selection possible.

While nothing can adequately replace oral and practical instruction by a competent teacher, in the use of the microscope, in making sections, in mounting, etc., it is nevertheless possible to acquire a good deal of knowledge and experience by self-instruction. For those who have to depend upon this, the best work is probably the following:

Strassburger, Dr. Ed. Das kleine botanische Practicum für Anfänger. Anleitung zum Selbst-Studium der mikroskopischen Botanik, etc. 8vo. Jena, 1884. [This book should find an English translator.]

Another good aid is:

Behrens, W. Hilfsbuch zur Ausführung mikroskopischer Untersuchungen im botanischen Laboratorium. 8vo. Braunschweig, 1884.

In addition to these the following may be studied:

Flückiger, F. A. Grundlagen zur pharmaceutischen Waarenkunde. 8vo. Berlin, 1873.

Wiesner, Dr. J. Die Rohstoffe des Pflanzenreichs. 8vo. Leipzig, 1873.

Wiesner, Dr. J. Elemente der wissenschaftlichen Botanik. I. and II. 8vo. Wien, 1881, 1884.

Vogl, Dr. Aug. Arzneikörper aus den drei Naturreichen in pharmakognostischer Hinsicht. 8vo., Wien, 1880. (The introduction is specially valuable.)

Oldberg and Wall. Companion to the U. S. Pharm. 8vo. N. Y., 1884. (Appendix.)

Berg's Atlas zur pharmaceutischen Waarenkunde. 8vo. Berlin, 1865.

Prof. J. M. Maisch is also expected soon to publish a work covering the same ground.

Of special works on the microscope, treating of its application to botany, we might mention the following out of a large number:

Carpenter, W. B. The Microscope and its Revelations. 6th ed. Sm. 8vo. Phila., 1881.

Wythe, J. H. The Microscopist. 8vo. Phila., 1880.

Beale, L. S. How to work with the Microscope. 5th ed. 8vo. London, 1880.

Hogg, Jabez. The Microscope. Sm. 8vo. London, 1883.

Formulae Wanted.—Some of our correspondents make inquiries after the following:

Formula of a mucilage like that sold in bottles, one for taffy tolu, and another for spruce gum (for chewing).

CORRESPONDENCE.

The Source of Todd's Pipmenthol.

DEAR SIR:—Noticing with interest the articles in your journal relating to pipmenthol and menthol, their derivation, manufacture, etc., I shall take pleasure, at an early day, in giving your readers some facts which will, I trust, satisfactorily settle some controverted points, and perhaps throw some light on other questions that as yet are a subject of popular inquiry only. For lack of time, I can hardly do more at present than to settle the discussion as to the variety of plant from which I produce my peppermint crystals—pipmenthol. I had indeed supposed that the public mind was set right in the matter, until my attention was called to the article "Source of Todd's Menthol" in the AMERICAN DRUGGIST, June, 1885, p. 115. Unfortunately, I had not observed the query on "peppermint" (No. 1,450, p. 77, AM. DRUGGIST for April), which called forth this inquiry, or I should promptly have corrected a statement so misleading.

In the query referred to, Mr. Christy says: "We have furnished Mr. A. M. Todd with his stock of plants."

The facts are as follows: After having discovered and commenced the manufacture of pipmenthol, I learned from Mr. Thos. Christy that he had Japanese menthol plants for sale, and being unable to supply pipmenthol in as great quantity as was demanded, and thinking it might be profitable to make japmenthol also, I promptly cabled to him for all his plants, also for a shipment of "white Mitcham" and "black Mitcham" peppermint, as I wished to determine their comparative value on American soil. Unfortunately, the plants proved a failure, and I have not a dozen of either variety from my investment, which was, I think, over three thousand plants. As I reported the facts to Mr. Christy last summer and fall, I was much surprised to see the statement referred to, for I have not had sufficient Japanese plants yet to produce an ounce of menthol, nor even to determine their value by experimental distillation.

The variety of plants which I have exclusively used is the true peppermint, *Mentha piperita*, which is the variety we grow in America for the essential oil of peppermint.

This plant is more robust in its growth than either of the English varieties, as I observed them growing in the mint fields of Mitcham, England, in July, 1875. It differs from them in these respects: it is in both leaf and stem of lighter color than the "black Mitcham," and of somewhat darker color than the white Mitcham. The stems of the black are a dark purple, and the deep-colored veins of the leaves give them also a purple hue. The "white" has a green stem and leaf. There is not sufficient difference, however, in the general structure of the plants, in the opinion of E. M. Holmes, to entitle the "white" and "black" to distinctive botanical names. Our American variety has a light purple stem, but no purple in the leaf, so in color it might be called a blending of the "black" and "white," but, as already observed, it is more robust in growth than either of the others. It is said that there are two varieties of the Japanese menthol plant (*Mentha arvensis*) growing in Japan, distinguished by a dark and light color, as in England, and that the former grows in the north and is more preferable.

To determine the facts in this case, and to test the comparative value of

each variety in manufacturing and for cultivation, I have ordered direct shipments from Japan, and shall also have more English plants. I shall, after giving each variety a like soil and like conditions, carefully note their distinctive traits and characteristics, determine their comparative value, and, if possible, their relationship, and will find pleasure in giving your readers such facts as seem worthy of public interest. Meantime I remain, yours most respectfully, A. M. TODD.

NOTTAWA, ST. JOSEPH'S Co.,
MICH., June 22d, 1885.

Hospital Stewards in the Army.

Editor American Druggist.

SIR:—In your issue of June appears a letter signed "Hospital Steward, U.S.A.," that does harm to the cause that he represents, by inviting the antagonism of other branches of the army, and which conveys to people unfamiliar with military usages, exceedingly erroneous ideas. I am in full accord with any efforts tending to the increase of the pay and allowances of non-commissioned officers, hospital stewards included, coincident with an increase of efficiency, but I do not think that the statements made by your correspondent are likely to aid the movement desired.

Referring in detail to his complaints, the social status of hospital stewards is regulated partly by the necessities arising from the peculiar conditions under which soldiers live, and partly in accordance with general customs. The social relations of the families of officers and enlisted men, with a few exceptions, are about what they would be in civil life. An officer cannot associate on familiar terms with enlisted men, whatever may be their merits, without damage to discipline, nor can the ladies of his family meet on equal terms the wives of the men under his command without affecting him. That the wives and daughters of hospital stewards are "often classed with washerwomen and servants of the officers" is true, since the wife is usually hospital matron, whose official duties are limited to washing the hospital linen. Your correspondent regards this view as unjust, but admits in his closing paragraph that this is really their position. The statement of authorized allowances is approximately correct, but a steward usually gets far more than he can legally claim. It may be that at some posts his one room is "with the Post-Surgeon's stables," but that it is in very close connection therewith may be doubted. Ninety-nine times out of a hundred he has as many stoves as he needs; the hospital allowance of fuel is so liberal that he can burn all that necessity or inclination may require, and his allowance of clothing is greater than that of the private soldier.

As to being ordered "to button up his blouse," which he seems to regard as an insult, the order was certainly legal, and probably commendable. An undershirt, or even white shirt, displayed through an unbuttoned blouse, a garment intended to be worn buttoned, presents a slovenly and unmilitary appearance, and is not tolerated in other enlisted men on military duty, or while passing an officer. The rank of the officer who gave this order, his qualifications, and his parentage had better not been introduced. The legality or manner of giving an order may be questioned in a proper way, but nothing justifies abuse of the authority from whom it issued.

Nor is the advancement of the hospital stewards to be obtained by belittling the importance of other non-commissioned staff positions. The Commissary Sergeant is a "grocery clerk," but he is a clerk who is practically in charge of a large amount of

valuable property of a character that may be easily damaged, or more or less readily made away with, unless constant care be exercised. It is true that his duties are not onerous, and that with honesty and sobriety, a quite moderate degree of intelligence will enable him to accomplish them satisfactorily, but as a rule he does far more work than a steward. The Quartermaster Sergeant, who "bosses the mules and wagons of his department," does not do this except indirectly, and does have many things to look after. At a small post, a non-commissioned officer of the line is in charge of stables; at large posts a civilian wagon master. The Q. M. Sergt. receives and compares with the invoices all stores received at the post (original packages are not opened), is responsible to his immediate superior that all issues are properly made, and that the whereabouts of every non-expendable article is known. He makes out, often personally, and is held responsible by the Q. M., for the accuracy of the multiple reports and returns of the department. He is supposed to, and usually does, keep track of the orders constantly being issued that modify existing regulations affecting his department. In the same way that your correspondent claims to be responsible for property, the Q. M. Sergt. is responsible for one hundred to ten thousand times as much. Although not material to the issue, both Q. M. and Com. Sergeants are usually old soldiers, the value of whose services to the U. S. has been proven by years of trial.

The clerical duties of a hospital steward, at ordinary posts, with the exception of a few minutes' daily work on the morning report, and the copying for transmission and record of the official letters of the medical officers, occupy about three days at the end of each month, an additional day at the end of a quarter, and perhaps a week at the end of the year. Stewards are not responsible for property, except as every soldier is for articles intrusted to him. The legally responsible party is the Post Surgeon. He has charged against his pay the value of articles lost or destroyed, for which he cannot render a satisfactory explanation. A steward can only be held pecuniarily responsible after trial and sentence by a General Court Martial. To avoid this, he may make good, shortages in property that has been under his immediate supervision, but he cannot be compelled to do it.

The compensation of a steward is not measured by his pay proper. Besides this, which is for a first enlistment \$30 a month, he receives his food, lodging, furniture, clothing, lamps and oil, fuel, and to a certain extent attendance, since the hospital nurses or fatigue parties do such work as cutting and carrying his wood and bringing water. If he be married, his wife is usually appointed hospital matron, if she desires the position, and receives for washing the hospital bedding and towels \$10 a month and a ration. It is safe to say that a married steward receives treble the allowance of rooms, fuel, etc., to which he is entitled.

In conclusion, there are abundant reasons to be offered why an intelligent and deserving class of non-commissioned officers should receive increased pay. Misleading statements and unfounded claims in public prints may do irretrievable damage to their hopes, and a just cause needs no such bolstering.

ARMY.

The New Belgian Pharmacopoeia has just been issued. It forms a stout volume of 800 pages. The text is in Latin and French. It will go into official use on September 1st, 1885.

BIBLIOGRAPHY.

THE MEDICAL DIRECTORY OF PHILADELPHIA, Pennsylvania, Delaware, and the Southern Half of New Jersey. 1885. Philadelphia: P. Blakiston, Son & Co. Pp. 397. Morocco, Gilt Edges, \$2.50.

THIS work has been considerably increased in its scope since last year, and is now the handsomest and most comprehensive directory to physicians, pharmacists, and dentists with which we are acquainted. Its contents embrace pretty much everything that can be expected in a medical directory, and its seal-skin, flexible covers, edges gilded on a red ground, and clean typography, make it a pleasing object for the office table.

CHOLERA: Its History, Cause, and Prevention. By EZRA A. BARTLETT, M.D. Albany, N. Y.: H. H. Bender Pp. 105. Small 8vo. \$0.30.

THIS is a very well-arranged and clearly-written popular manual upon the subject of Cholera, which treats of the History of Cholera, its Cause, Propagation and Prevention, and the Hygiene of Food and Drink, and Disinfection. Its size permits of the book being carried in the pocket, and we recommend it for popular sale by druggists, as something that will be in demand this summer.

PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, at Thirty-second Annual Meeting, held at Milwaukee, Wis., August, 1884; also the Constitution, By-laws, and Roll of Members, Philadelphia: 1885. Pp. 623, 174, 84.

BESIDES the contents indicated in the title, this volume has a portrait of Daniel B. Smith and a General Index of Volumes XVIII. to XXX. of this series, most admirably compiled by that painstaking man, Hans M. Wilder. This last feature alone fills 194 pages, and should, with the preceding General Index, be in the hands of every working pharmacist.

BABYHOOD is a new monthly magazine, of 32 pages, edited by LEROY MILTON YALE, M.D., and MARION HARLAND; the former editing the medical department, the latter supervising the departments relating to general nursery routine. It is issued by the Babyhood Publishing Co., of 18 Spruce street, New York, for \$0.15 a number, or \$1.50 a year. It is very admirably adapted for the dissemination of knowledge relating to the physical, mental, and moral well-being of infancy.

HAY-FEVER and its Successful Treatment, etc. By CHARLES E. SAJOUS, M.D., etc. Philadelphia: F. A. Davis, Att'y. 1885. Pp. 103.

THIS is the text of an essay read before the Philadelphia Laryngological Society in April, 1884. The writer's opinion of the cause of the disease coincides with that of previous writers, inasmuch as he believes that a hereditary or acquired predisposition, with pathological changes in the mucous membrane of the nasal cavity, and the existence of a special, existing cause are all factors in producing the paroxysm; and that it is necessary to remove only one of these three conditions to prevent attacks. The greater portion of the work is, therefore, devoted to methods of relieving the pathologi-

cal state of the nasal cavity. It is clearly written, well illustrated, and handsomely published, but lacks both table of contents and index.

UNIVERSAL-PHARMAKOPÖE. Eine vergleichende Zusammenstellung der zur Zeit in Europa und Nordamerika gültigen Pharmakopöen. Von DR. BRUNO HIRSCH. 4te Lieferung, 1885.

WE have already in our last volume (page 178) drawn attention to this important publication, and have allowed several numbers to pass by before coming back to the subject, since we desired to have a larger selection of interesting matter to choose from, so that our readers might convince themselves of the importance of this publication. We have reason to know that the author expected the whole work to be passed through the press as rapidly as possible. Whatever delay there may have been, must be the publisher's fault. As it is, we could almost wish that the author had been able to make use of the new



"Give me some soda-powders, please, and let me have some which do not effervesce so boisterously, as I am very nervous."—*Fliegende Blätter*.

British and Belgian pharmacopœias, which are expected to be out in a few weeks. The Spanish pharmacopœia has also appeared in a new edition since the author's work was begun to be printed, but there is so little evidence of progress visible in the new revision that the existence of the new pharmacopœia, outside of Spain, has scarcely been noticed or alluded to in the pharmaceutical literature. We have no doubt that the author will give, in an appendix, a summary of the contents of the several new pharmacopœias.

We have made a translation of several of the more important articles contained in the last-published number, which will be found in this issue of our journal.

The work will be completed in about 15 numbers, at 2 marks each.

AN OUTLINE OF A COURSE OF STUDY IN PRACTICAL PHARMACY. By OSCAR OLDBERG, Phar.D., Professor of the Theory and Practice of Pharmacy, and Director of the Pharm. Laboratory at the Chicago College of Pharmacy. *Intended as a Guide for Students.* 8vo. (Published by the author.) Chicago, 1885 (pp. 104).

THIS "outline" offers a most excellent framework around which not only the didactic lectures may be grouped and constructed, but which will also be found a very serviceable guide for self-study, repetition, and self-examination. The author did not confine himself to theoretical or operative pharmacy exclusively, but also trends upon chemistry and materia medica, rightly believing that certain features

of these disciplines must be drawn into the course on pharmacy.

We have no doubt that this outline will be of great value to all students of pharmacy, whether they are pupils of Prof. Oldberg or not, since the subjects treated of must be studied by them some time or another, though the order in which they are lectured upon in other schools may differ from that adopted by Prof. Oldberg.

MITTHEILUNGEN DER K. K. CHEMISCH-PHYSIOLOGISCHEN VERSUCHSSTATION FUER WEIN- UND OBSTBAU in Klosterneuburg bei Wien. Von PROF. DR. L. ROESLER. Vol. IV. Pp. 52, 4to, with 48 tables.

THIS report contains the results of analyses of a large number of wines by Dr. Roesler, B. Haas, and L. Weigert, as well as descriptions of the methods and apparatus employed.

DRUGGISTS' AND TRAVELERS' POCKET PRICE BOOK. Pp. 287.

THIS is a book having titles on the margin of the left hand page, and the remainder of both opposite pages ruled in 14 columns for prices of various invoices or for making inventories. There is also a marginal alphabetical index. The book seems to have been made so decidedly for the benefit of the purchaser that the maker has forgotten his own interest in it, so that the title-page has no indication of where or by whom it is made, or of its price.

SUPPLEMENT TO THE TRANSACTIONS OF THE SEI I. KWAI, or Society for the Advancement of Medical Science in Japan. Tokio. Foreign Subscription, \$2.00.

ITEMS.

Fruit of the Calabash Tree (*Crescentia Cujete* Lin.).—

The pulp and expressed juice are both employed in Brazil as a purgative. A grain and a half of the alcoholic extract acts as a laxative, and seven grains or more as a drastic. The fresh pulp is also employed locally in erysipelas. It is first boiled with water to a black paste, vinegar is then added, and it is boiled again. It is applied on linen.—*N. Y. Med. Jour.* from *Nouveaux remèdes*.

Paraldehyde.—Mr. Hodgson has used this drug as a hypnotic in insomnia unattended with pain, in mania, hypochondriasis, delirium tremens, and migraine. Compared with chloral, it has the advantage of not being a cardiac depressant. He recommends it also for both acute and chronic gout, but finds it unsuitable, on account of its pungency, in inflammations of the throat or stomach. This quality always renders free dilution necessary. It is weak as an anodyne, but heightens the effect of morphia.—*Br. Med. Jour.*

Anagyrene is the alkaloid extracted by Hardy and Gallois from *Anagyris foetida* and *A. indica*. According to the former, small doses act as a tonic, but large doses cause the death of small animals by arresting respiration.

Basis for Ointments and Suppositories.—The seeds of *Hopea splendida*, *H. aspera*, and some other species are said to furnish a fatty matter known in the Sunda Islands as *myniak tangkawank* or *myniak sangkawank*, which is used for various purposes, and seems likely to be of value pharmaceutically.

American Druggist

VOL. XIV. No. 9.

NEW YORK, SEPTEMBER, 1885.

Whole No. 135.

Drug-Store Insurance.*

BUILDINGS are rated (by insurance companies) as first-class when built of brick or stone, metal or slate roof, brick, stone, or metal cornices, division walls extending above roof, iron, or iron-lined shutters, front and rear.

Second-class buildings vary from first-class in one particular.

Third-class buildings vary from first-class buildings in more than one particular.

The rates fixed on drugs are, in most cities and towns of this State, higher than on other classes of merchandise, the reasons assigned being that the goods are more inflammable, and the salvage, in the event of fire, likely to be less. The object of our query is to demonstrate whether this theory is well-founded or otherwise. To accomplish this, I recently sent circulars to all members of our Association, as well as a number to other prominent druggists in the State, asking them to reply to certain questions.

To these circulars I received 192 replies. The sum of these replies is as follows:

Total amount of insurance carried by the above number of retail druggists during the last five years, \$972,250. (This includes, in a few cases, insurance on real estate; but the total amount so included does not probably exceed \$60,000.)

Total amount of premiums paid during that time by above number was \$47,287.65.

Total amount paid above parties for losses during same time, \$15,476.02.

These replies represent 109 towns and cities in this State, including all the principal ones.

The highest rate of premium reported is $\frac{3}{4}$ per cent. (This is outside of oil towns, which I have not included in this report, where as high as 10 per cent is charged.) The lowest rate reported in stock companies is $\frac{1}{4}$ per cent (this by four parties only).

Number reporting rate of $\frac{1}{4}$ and upward.....	112
Number reporting rate of $\frac{1}{2}$ and under	83
Average rate about.....	$\frac{1}{4}$

Rates on other lines of merchandise, when given, are found to be from 10 to 25 per cent lower than those on drugs. The deduction from the above summary is that, notwithstanding the claim of insurance companies to the contrary, retail drug stocks do not appear to burn more frequently, or show a greater loss than other lines of merchandise rated lower. That part of the stock carried in retail drug stores is very inflammable, is not denied. That the druggists are, by the very nature of their business, trained to the exercise of more than ordinary care, appears, however, to be lost sight of by insurance men in fixing the hazard. There is certainly no class of their patrons that exercise more precautions to prevent fires and accidents than retail druggists. This is prominently emphasized in the summing-up which these replies enable me to make.

The moral hazard, which none better than the experienced insurance people know how to value, is what we are justified in calling first-class among druggists. Thirteen losses reported by 192 druggists in five years (five of which were for \$100 and under) are certainly no proof of "extra hazardous" risk. The only loss of any importance, and which makes up more than one-half of the total sum paid all parties heard from, was that of Messrs.

Dale & Hart, of York, of \$9,000. Their fire originated in the store and was caused by benzine. Nearly all the other losses resulted from fires in neighboring stores. Neither is there reason to believe, from the statement of those who included in their replies their experience for twenty or even thirty years back, that the data given for five years does not fairly cover the average for the longer period.

These replies, coming as they do indiscriminately from members of the trade from all sections of the State, and representing, as we have a right to assume they do, a fair average, then justify a calculation something like this:

Total number of druggists in Pennsylvania.....	1,800
Average amount of insurance carried by each, say.....	\$4,000
Average rate of premium paid ..	$\frac{1}{4}$
Total amount paid in premiums for five years.....	\$420,000

Losses paid in five years, average for each party insured being \$80, making a total of \$144,000; leaving a gross profit to insurance companies upon retail drug stocks alone, during five years, of \$276,000.

It would appear from the above that, allowing interest on capital, moderate commissions to brokers, agents, and other necessary expenses, we would still be justified in expecting a material reduction in rates of premium. But insurance companies claim to have been losing money, and have for this reason latterly advanced rates all around. Is there not probably some other reason for this condition than the large losses by fire? In a very carefully prepared report, made by the committee of the National Wholesale Drug Association in 1833, we find the following:

"It is shown, in the official table of the business of insurance companies in three States, that 129 companies pay an average of \$31,660 each for salaries of officers alone; equal to .07 per cent of their total income. Commissions about .15 per cent, and other expenses about .15 per cent additional, an average of .37 per cent on their total income. At this rate of expenditure, apparently not reduced since the currency inflation, it is not surprising that 66 companies paid out more than their income in 1882." Fourteen British offices doing business in the United States reported in 1879 that their expenses in America were 31 per cent.

What do the publications of the insurance people show with reference to the losses in drug stores? The Philadelphia Insurance Chart, published by Mr. J. H. C. Whiting, gives the total number of fires in Philadelphia during ten years ending with 1833, retail drug stores, as 22. Total loss on same, \$18,838; per cent of loss on amount insurance carried by above, 10.3. The same authority gives the percentage of loss on the amount insured in wholesale drug-stores resulting from 18 fires during the same time at 6.8 per cent, while the percentage of loss resulting from 47 fires in wholesale dry-goods and trimming-stores was 17.3 per cent. Certainly not an unfavorable exhibit, even by their own showing, for our branch of trade.

"Enough has been said, I think, to demonstrate clearly that we have reason for energetic protest against the discrimination made by insurance companies against druggists. The next proper matter for our consideration is how this can be remedied. As long as rates are arbitrarily fixed by combina-

tions, a simple protest, even coming, as it might, from so respectable a body as our own, would avail but little.

"Among the answers received, a few stated that they were insuring in mutual companies, and the assessments in such companies appear to have made the cost of their insurance average less than $\frac{1}{4}$ per cent."

This may be worth remembering, and may give us a clue to one of the remedies available. I quote again from the report made to the N. W. D. A. in 1883:

"Mutual companies for counties and cities, or for merchants or manufacturers, in a State, work admirably, if careful to receive reliable members and good risks. They are not so effectual, and lose their economical and reliable features, if extended over too large a territory, and may prove to be no safeguard in case of extensive fires in cities. They well illustrate that the business can be done inexpensively."

The same committee, reporting to the meeting of the Association held in St. Louis, 1884, stated that the experience of a number of manufacturers in New England States, whose risks had been rated as "hazardous," and who had been charged from 3 to 5 per cent by stock companies, had reduced the cost of their insurance to less than 30 cents on the hundred dollars by mutual insurance. They have none of the large expenses of stock companies which include heavy salaries, enormous commissions, and large office expenses.

As retail drug stocks are usually comparatively small and but few in number in each city or town, an experiment of mutual insurance by this class of dealers in this State would seem to be worthy of serious consideration. I suggest the appointment of a committee to further investigate this subject, and report at our next annual meeting. Informing ourselves thoroughly as to the facts upon what might be termed our side of this question must result in a benefit to all. In this, as in everything, "knowledge is power." Many of our number have submitted to exorbitant rates without having any facts or figures with which to combat them. Agitation may result in an equalization, if not a general lowering of rates. One of the parties heard from reports to me that, having determined to do his own insuring, he found that the company, rather than lose his business, reduced his rate from $\frac{1}{4}$ to $\frac{1}{8}$ per cent.

Before closing this paper, it may be well to refer to the importance of one precautionary measure which some of you may neglect. Retail druggists sometimes do not take an annual inventory of stock on hand, and, in the event of a fire, are consequently unable to furnish proper proofs of their loss.

Medical Discovery.—The French Academy of Medicine has recently awarded a prize to Dr. Murrell "for the discovery of nitro-glycerin as a remedy for angina pectoris." This announcement amuses the *Homœopathic World*. Dr. Murrell published his "discovery" in 1880; the French Academy discovers the discovery in 1885; while, according to the *Homœopathic World*, Dr. Constantine Hering and Dr. Dudgeon established and defined the medicinal value of nitro-glycerin, or *glonoin*, as they called it, "about the time Dr. Murrell was learning to walk—if, indeed, his evolution had advanced so far,

* From a paper read by M. N. Kline at the Eighth Annual Meeting of the Pennsylvania Pharmaceutical Association.

An Incompatibility of Chloral Hydrate.

FROM a recent paper by Prof. G. F. H. Markoe in the *Bost. Med. and Surg. Journ.*, we abstract the following:

In December, 1884, the writer had sent to him a bottle containing a mixture, and a prescription, of which the following is an exact copy:

R Bromide potass.,
Chloral hydrate..... $\bar{a}\bar{a}$ 3 iij.
Tr. opii et camph.,
Syr. zingiber $\bar{a}\bar{a}$ $\frac{3}{4}$ iss.

M. Sig. One or two teaspoonfuls in half a wine-glass of water every two to six hours. For sleep.

The claim was made by the physician that the pharmacist who dispensed the mixture had made a mistake, and the matter was put into the writer's hands for investigation. The mixture as received consisted of two layers—a clear, dark-brown liquid floating upon a light-colored dense liquid. The dark-colored supernatant liquid had an intensely strong taste, in which the characteristic taste of chloral hydrate predominated; but it was modified by the presence of ginger, camphor, and anise, all of which could be recognized. On shaking the two liquids together, a somewhat turbid mixture resulted; on standing, the two layers formed again.

The prescription was then made up with the result that the ingredients separated into two layers, apparently in the same way with the mixture sent for examination. The writer could discover no practical difference in the two samples and therefore concluded that some decomposition had taken place.

Numerous experiments were tried, which served to show that the addition of potassium bromide, sodium bromide, sodium chloride, and magnesium sulphate to strong solutions of chloral hydrate, together with the presence of alcohol, determined a separation of the liquids into two layers. Ammonium chloride, ammonium bromide, potassium nitrate, and calcium bromide, did not disturb the same chloral solutions.

The practical lesson to be learned from this incompatible prescription is that alcoholic preparations should not be prescribed with chloral hydrate, especially not in connection with the bromides of potassium and sodium; because, if the solutions used are at all concentrated, the chloral will separate as alcoholate, float on the surface, and a great risk will be incurred of giving a large overdose, the patient having received no caution with regard to the necessity of shaking the contents of the bottle before taking a dose.

NOTE.—The same question was laid before us by a correspondent in 1881, and we gave an answer under Query No. 949, October, 1881, p. 302. The results then arrived at agree with those of Prof. Markoe.—ED. AM. DRUGGIST.

Traumaticine is a name given by Auspitz, of Vienna, to a solution of about one part of gutta-percha in ten parts of chloroform—a syrupy liquid having the odor of chloroform and a color and consistence proportionate to the amount of gutta-percha used. [As *chloro-percha*, this has already been used in the United States more than twenty years, and employed as a protective covering for the skin. Auspitz, however, adds to it sulphur, iodoform, salicylic, boric, or pyrogallie acid, with a view to greater remedial action. It is to be doubted, however, whether a vehicle so insoluble in ordinary menstrua as gutta-percha will be capable of relinquishing any remedial agents incorporated with it when applied to the skin or ulcerated surfaces.—ED. AM. DRUGGIST.]

Antipyrine as an Antipyretic.

DR. GEO. B. SHATTUCK, in reporting a series of trials of antipyrine in the Boston City Hospital (*Boston Med. and Surg. Journ.*), says that 2 grammes were given hypodermically at once, in a case of sun-stroke, and the patient made a rapid recovery, although brought to the hospital with a temperature of 107° Fahr. The remedy was given in several cases of intermittent fever without interrupting the chills or appreciable effect. The fall in temperature ordinarily begins about an hour after the remedy is taken, and reaches its lowest point in from three to five hours after the full dose of 6 grammes in divided doses. A fall of 3 to 5 degrees is easily obtained. The change in the rate of the pulse is less marked. The urine is somewhat diminished, is free from albumin, and but little altered in color.

Dr. Shattuck indorses antipyrine as: (a) An efficient and reasonably safe antipyretic, without antiperiodic properties; (b) whose exhibition in proper doses is, as a rule, unattended by serious discomforts or drawbacks; (c) by reducing a high temperature it frequently substitutes calm for excitement, and sleep for restlessness; (d) otherwise it does not usually modify the course of the disease, and certainly not of typhoid fever; (e) the quality of the sample used must be carefully watched, a poor article will produce vomiting, chills and collapse, when a good one will not; or, on the other hand, may be inefficient when the pure drug would have proved effective.

[The author is probably not aware that antipyrine is made only by one firm, the largest aniline color works in the world. We never observed any difference in the product. It is only sold in the original one oz. packages, and being prepared under the control of the most competent chemists, is not likely to vary in quality. Of course, it is quite proper to examine the latter, but to do so properly, is not an easy matter for any but a well-trained chemist.—ED. AM. DRUGGIST.]

The Occasionally Offensive Odor of Simple Syrup.

IN most "refined" sugars of commerce we find ultramarine, added by the manufacturer to overcome the undesirable yellow tinge of the refined sugar (blue and yellow are complementary colors). Ultramarine contains sulphur (probably as a sodium polysulphide) in combination, which develops H₂S on treatment with acids. The simple syrup, which generally contains more or less invert-sugar or glucose (either originally present in the sugar, or produced by the ebullition), sometimes acquires an acid reaction, due most likely to products caused by a species of fermentation induced by micro-organisms (*torula*, *penicillium*, *et al.*).

The free acid of the syrup reacting on the sulphide present would generate H₂S, which, if present even in minute quantity, would make a comparatively large volume of syrup offensive to the smell.

The offensive odor, which has come under my notice several times, and always in summer, while it shows the unmistakable presence of H₂S, also has a pungent element in it, which might be attributed to the simultaneous presence of acetic or formic acids.

In the presence of a base, *e. g.*, lime (which does sometimes occur in sugar as a remnant from purification process)—the necessary conditions for the development of lactic acid might also exist, *viz.*, the presence of the penicillium, the base, sugar, and the required temperature, as we have it in summer, 70°–80° F. In no case did I find excessive pressure or effervescence

as of developed CO₂. Syrup simpler is best prepared and preserved by boiling the sugar with water for a few minutes, straining through new cloth previously rinsed in boiling water, and filling into clean bottles previously heated up to the boiling point in a water-bath; the bottles ought then to be capped and kept in the cellar.—A. DRESCHER.

On Colchicin.

SOME time ago, A. Hondès published the results of investigations on the nature of the active principle of colchicum. He announced the discovery of *crystallizable colchicin*, and gave a description of the process of extraction and the properties of the substance. (See *AM. DRUGG.*, 1884, p. 153.)

The results obtained by Hondès differ so much from those obtained by Hertell, who worked under Dragendorff's direction, that Mr. C. J. Bender determined to examine Hondès' statement critically. His results are now published in the *Pharm. Centralhalle* of June 25th, and are given here in abstract.

Mr. Bender extracted 48½ kilos of colchicum seed, first with 600 liters, and then again with 300 liters of hot alcohol of 95 per cent. The liquid having been cleared by settling and filtering, the alcohol was distilled off at a gentle heat. The residue was then made up with water to 30 liters, and the liquid deprived of fat by repeated shaking with petroleum-ether. The aqueous solution, after being separated from the ethereal solution of fat, was slightly warmed to remove traces of the petroleum-ether, and filtered after cooling. The yellowish-brown filtrate was then shaken with 25 kilos of chloroform (free from alcohol) during two hours, and set aside for some time to settle.

When the liquids had become sharply separated, the chloroform solution of colchicin was removed, treated with bicarbonate of sodium, and as much of the chloroform distilled off at a gentle heat as possible. The residue, dried to a constant weight, amounted to 276 Gm., or to 0.569 per cent of the original colchicum (taken as air-dry). After addition of soda to the liquid treated with chloroform, and repeated agitation with fresh portions of the latter, 20 Gm. more of a dark-colored alkaloid, having the nauseous odor of hyoscyamine, were obtained, which was not further studied.

The crude colchicin obtained above was dissolved in 250 Gm. [the original has 25 cg., which we believe to be a misprint for 250 g.] of alcohol at a gentle heat. The solution was allowed to cool, and the loss by evaporation restored. It was then mixed with 250 Gm. each of chloroform and benzine, and set aside for several days in a lukewarm place to evaporate spontaneously. At no time was there a sign of crystals observable, even when the bulk had diminished to 250 Gm. Subsequent renewed treatment with tartaric acid and warm water, and removal of resinous matter, led to no better result. The colchicin is finally obtained as a pale yellowish, amorphous powder, amounting to 0.4948 per cent of the original weight of the seeds. It was impossible to obtain an absolutely colorless preparation, since traces of colchicoresin accompany it, which has an enormous coloring power, and is not entirely insoluble in water.

Hondès' crystalline colchicin is, therefore, a myth. True colchicin is always obtained as an amorphous powder, melting at 145° C., and is neutral. It cannot combine with acids, and even its tannate is an indefinite compound. Bender's colchicin was found to be absolutely identical with that obtained and studied by Hertell and Dragendorff.

Pills.*

Pills containing Aloes, Resins and Gum Resins.

I HAD meant originally to have interwoven some historical details into these purely dispensing observations. A public request for aid in this direction turned out a blank failure; and perhaps it is better that the subject should be limited and I have had to trust solely to my own experiences in West-end pharmacy. The names of aloes pills, not counting proprietary or patent medicines, are legion. They are perplexing in manipulation and are not a pleasant task.

Foremost in reputation are Dr. Marshall Hall's pills.

℞ Aloes Barbado.,
Sapon. Castil.,
Ext. glycyrrhizæ,
Theriac. 3ss pp. æquales.
Dissolve in water; strain and evaporate to a proper pilular consistence.

The doctor probably had never personally dispensed his own formula. By the simple substitution of pulvis glycyrrhizæ for the extract they are prepared with ease and with no detriment to their therapeutic value. Innumerable other forms I leave unnoticed, as they are all made by means of one or two excipients, which may be illustrated by those known as Lady Hesketh's, Lady Webster's, Lady de Crespigny's Pills, and by other synonyms.

According to Dr. Paris, these dinner pills are the *Pilulæ stomachicæ vulgo pilulæ ante cibum* of the *Codex Medicamentarius Parisiensis Editio Quinta*, A.D. 1758.

Original Form.

℞ Aloes opt. 3 vi.
Mastiche,
Rosarum rubr. 3ss
Syr. absinthii q.s.
M. Ft. massa, in pilulas gr. iij. dividenda.

This was abandoned either by the illustrious ladies named; or more probably by an ingenious assistant, who, by discarding the prescribed excipients and adding soap, made a more scientific compound. Distinction must again be drawn between stock pills and those extemporaneously prepared.

For the mass, this became the formula:—

℞ Aloes. 6
Mastiche. 2
Hard soap } 3ss
Water }

Beat in hot iron mortar until incorporated, and divide into three-grain pills.

The soap is doubled and water omitted in extemporaneous dispensing, and the following may be accepted as a correct formula:—

℞ Aloes... 3 vi.
Mastiche 3 ij.
P. Saponis 3 i.
M. et divide in pilulas, gr. iij.
(Made with dec. aloes comp. 3 ss.)

All aloetic pills and those containing resin or gum resin may be made in three ways.

1. Distilled water.
2. Mucilage.
3. Decoct. aloes comp.

Each, taken alone, is successful; the compound decoction of aloes works beautifully and gives a gloss when finished like a coat of varnish. No powder should be added to the pills when made with the last excipient.

℞ Ext. aloes Barbado. 3 ss.
Pulv. scammon. gr. xij.
Sapon. dur. gr. vi.
Misce. Fiant pil. xij.

This very usual formula (and variations) is dispensed easily and best with

Decoct. aloes comp. gtt. ij.

A 7½ per cent solution of caustic lime

is not a bad solvent for gum-resins (aloes 1 in 15; ammoniacum 1 in 4; guaiacum 1 in 7), but it cannot be recommended for pill-making though capable of ingenious applications in dispensing.

℞ Cambogia,
Pulv. scillæ 3ss gr. xij.
Saponis dur. 3 i.
M. Fiant pil. xlvij.

Here the homœopathic treatment with distilled water, mucilage, or decoct. aloes comp. will serve equally well.

Pix burgundica is manipulated into pills by softening the mass in a warm mortar; weigh, cut, and roll on a machine slightly warmed and give a finish to the pills on a cold slab. They will keep when made according to the following formula:—

℞ Picis burgund. 3 i.
Pulv. althææ,
Cereæ flavæ 3ss gr. vi.
In pilulas xij. dividend. s.a.

Canada balsam, manipulated by heat, requires to be set with calcined magnesias—a good result is obtained.

℞ Balsam. canadens. 3 i.
Magnes. calc. gr. 50.
In pil. xij. dividend. s.a. Non sine calore.

If made with pulv. glycyrrhizæ, 70 grains would be required.

Pills containing Oils, Hydrocarbons, or Camphor.

This is a group rather than a class.

The difficulty which occurs with respect to essential oils is due to a natural desire on the prescriber's part to enhance the medicinal efficacy of a pill, or more thoroughly to disguise its taste. His attention is not directed to the fact that a large quantity of a volatile liquid cannot be combined with the solid ingredients without some special manipulation.

Without any wrong intention, a good deal of the essential oil never gets incorporated. Yet we are bound as pharmacists to observe the motto, "Prescriptions accurately dispensed."

One rule must be observed: arrange for the oil first, and let remaining ingredients be an after-consideration.

No excipient or manipulation will save the pills when the whole formula is indiscriminately mixed together.

Safety lies in considering two things: (1) With which of the ingredients will the essential oil mix best? Take that always, and, if I may use the expression, thus kill the oil. When aloes is present, the dispenser is rescued from the dilemma. But there may be no such substance present, or the oil, volatile or otherwise, or a hydrocarbon pure may stand alone. Then comes the question to be considered: (2) With what substance will the oil combine so as to be incorporated in a pill mass?

Four chief excipients are at disposal, associated often with a non-hygroscopic powder.

1. Cera { flava } color to color.
 { alba }
2. Pulv. saponis dur.
3. Calcined magnesias.
4. Calcium phosphate, precipitated.

Recently an objection has been raised to wax, either white or yellow; but as the quantity required is so very small, and the real object is to retain the whole of a most fugitive remedial agent, the objection may be overruled. Lime is a questionable aid.

℞ Ext. coloc. comp. gr. iv.
Ext. rhei gr. ij.
Ol. carui. gtt. ij.
M. Fiant pil. ij. Mitte xij.

The formula has an innocent appearance, but twelve pills require twelve drops of oil.

To each two drops add first, either *cereæ flavæ* gr. i. or *magnesias calcinatæ* gr. i.

Take another formula, the medical intention of which it is not easy to determine. I hope my audience will

credit me for not bringing any fictitious recipes before their notice.

℞ Pulv. saponis. 3ss.
Ol. caryoph. ʒiij.
M. secundum artem, in pilulas xij. dividend.

The object probably was to exhibit a cordial stimulant.

The dispenser is at liberty to use his own discretion, and he may be advised to complete the formula by the addition of—

Calc. phosphat. precip. gr. x.
Magnes. calcin. gr. vi.

With regard to the following recipe no full direction can be given, as its dispensing depends upon the state in which pharmacists keep each and all of the ingredients. The oil complicates the formula, and must be the first care.

℞ Pil. aloes c. myrrh.,
Ferri sulph. 3ss gr. i.
Pil. galban. comp. gr. iss.
Ol. pulegii gtt. i.
M. Ft. pil. Mitte xij., i. ter quotidie ante cibos.

It cannot combine as so prescribed. Mix the oil first with—

Pulv. saponis. gr. vi.

At the risk of being charged with repetition, I would state that to add the soap to the pill mass is useless; treat the oil first, in all cases, and dispense afterwards *secundum artem*.

An ancient recipe for *Pilulæ colocynthidis*, P. L., 1773, comes under this category. It was called

Pilulæ ex Duobus.

℞ Colocynth pulp,
Scammony. 3ss
Oil of cloves. 3 ij.
Syrup of buckthorn. q. s.

Mix and form into a pill-mass. The composition is scientific; the oil caryophyllorum will make it keep for an indefinite length of time.

Add the oil to the scammony, and, when thoroughly incorporated, the colocynth. Mucilage in place of syrupus rhamni would make a better formula. The old celebrated preparation of colocynth was devised by Galen, under the name of *Pilulæ coccinæ*, of which innumerable imitations have arisen.

Under this heading must come balsam of copaiva, though I have not myself seen it ordered in the shape of pills except in foreign pharmacy. There are two methods, neither particularly good, still with care, effective.

℞ Bals. copaivæ 3 ss.
Magnes. calcinat. 3 ss.
M. Fiant pil. vi.

Wait five minutes and stiffen with pulv. glycyrrhizæ.

℞ Bals. copaivæ,
Magnes. calc. 3ss
Cereæ flavæ gr. vi.
M. Ft. pil. vi.

Make these on a warm slab; melt the wax; add the balsam, and, finally, the calcined magnesias. A pretty fair result is more expeditiously obtained than by the former process.

Neither formula is quite satisfactory. Oil of turpentine. *Oleum terebinthinæ* is troublesome to exhibit in a pilular form. The general plan used is—

℞ Ol. terebinth. ʒxl.
Magnes. calc. gr. xxij.
Cereæ albæ gr. viij.
M. Ft. pil. viij.

Melt and mix the wax with the turpentine and add the magnesias last.

Carbolic acid may be made into a pill-mass with white wax and soap. C. A. 18. *Cereæ albæ* 5. *Saponis* 1. A preferable form is—

℞ Acid. carbolic. gr. xxiv.
Pulv. glycyrrh. gr. xlvij.
Mucilag. gtt. iv.
M. Fiant pil. xvi. i. ter die sumenda.

Croton oil has unfortunately sometimes to be given to patients in a help-

* Read before the Chemists' Assistants' Association, March 26th, 1885, by JOSEPH INCE.

less state, in which case a pill would be inadmissible. This formula is used, and the remedy is put on the back of the tongue:—

℞ Ol. crotonis.....℥ij.
Pulv. sacchar. alb.....gr. viij.
M. Fiat oleosaccharum.

On the other hand, nothing is more easy to dispense than croton oil, because it is of a thick viscid nature, and the dose is so small.

℞ Ol. crotonis.....℥iv.
Pulv. glycyrrh.....℥i.
Mucilag.....gtt. xij.
M. Ft. pil. viij.

The only remark needed is that in this formula, syrup and other simple excipients are inferior to mucilage, advantage being taken of the emulsive properties of the latter.

℞ Pulv. scillæ,
Ext. coloc. co.....āā gr. vi.
Ol. croton.....℥i.
M. Ft. pil. tres, una omni altern. die sumenda.

Use the powdered squill to combine with the oil; then add the colocynth. Do not at first mix the three ingredients.

Creasote may be dispensed in various manners, all successful, so that crumb of bread, a traditional excipient, be excluded.

℞ Creasoti.....℥xxiv.
Pulv. saponis.....gr. xij.
Calc. phosphat.....gr. xxxvi.
M. Fiat pil. xij.

℞ Creasoti.....℥xxiv.
Cera flavæ,
Saponis.....āā gr. xij.
Pulv. glycyrrh.....q.s.
M. Fiat pilulæ xij.

℞ Creasoti.....℥xij.
Sapon dur.....gr. vi.
P. glycyrrh.....3 ss.
M. Fiat pilulæ xij.

An easy method, where large quantities are concerned, is the following:—

℞ Creasoti.....℥xxiv.
Pulv. glycyrrh.....3 i.
Mucilag.....gtt. xxiv.
M. Ft. pil. xxiv.

That is creasote and mucilage equal parts, and stiffen the mass with powdered liquorice.

Camphor pills, except as a quasi-proprietary medicine, kept ready-made by pharmacists, are not much used in England. In France, they are in considerable request, owing to the prestige given to this remedy by Raspail. They are usually coated so as to present an attractive appearance.

It should be recollected that camphor when in compound, and particularly when associated with vegetable extracts, exerts a deliquescent power, which is obviated by the subsequent and final addition of a minute quantity of tragacanth. A dispensing error is to powder the camphor extemporaneously for immediate use. Whether this be effected by means of rectified spirit or by any other mode, the camphor retains a certain dampness which complicates the result.

It should always be kept for dispensing purposes in a perfect state of comminution in a well stoppered, wide-mouth bottle. Though it may cake together, this is of little consequence as it disintegrates with the utmost facility.

Hence I omit precautions, usually advised, believing that the state of the camphor itself is the main cause of embarrassment.

℞ Ext. hyoscyam.....gr. xxxvi.
Camphoræ.....gr. xij.
M. Fiat pilulæ xij, quarum i. vel ij. quando opus sit, sumendæ.

Should the henbane extract be in a suitable condition, work together and add pulv. tragacanthæ, gr. ij. Should it be too soft, use heat as an aid-excipient, and then add the camphor.

Camphor Pills. Small.

℞ Camphoræ.....gr. xxiv.
Glycerin. c. tragac.....q.s.
M. Fiat pilulæ xij.

Camphor Pills. Medium.

℞ Camphoræ.....gr. xxxvi.
Ol. ricin.....gtt. viij.
Pulv. saponis.....gr. vi.
M. Fiat pilulæ xij.

Olive oil as a substitute may be correct in theory, but it is not satisfactory in practice.

Camphor Pills. Large.

℞ Camphoræ.....gr. xlviij.
Pulv. tragac.....gr. iij.
Saponis.....gr. vi.
Syrup. simpl.....℥xx
M. Fiat pilulæ xij.

Chemical Preparations.

Judgment is required in this most important section, and the dispenser must bring his chemistry to bear upon his work. Some substances are poisons in the strongest acceptance of the term; and as no pharmacist preparing a liquid formula for internal use would dispense these otherwise than in solution, he is bound to obey the same law when they enter into the composition of a pill mass. The exact solvent is immaterial, so that it be in itself harmless, and for this purpose glycerin is on the average the most effective. When chosen, the subsequent use of mucilage is contra-indicated.

Other substances have a crystalline structure which must be destroyed, for in so far as they remain crystalline they are intractable. Here perfect solution is desirable but not essential. These remarks are purposely a repetition of a former statement.

Certain chemicals are light and bulky, and therefore need a preparatory aid-excipient; some are heavy and compact, and require special treatment; others again are exceedingly difficult to combine, and for them an admirable excipient is available.

Such are the more salient points to which I would direct attention; it is for you who are chemists as well as druggists to amplify and extend the series.

Mercuric Chloride. — Bichloride of mercury, corrosive sublimate.

℞ Hydrarg. perchlor.....gr. iij.
Glycerini.....℥iij.
Pulv. acaciæ.....gr. xlv.
Conf. rosæ canin.....gr. xv.
M. Fiat pilulæ xxiv.

Dissolve the sublimate in the glycerin.

A medical man wrote the following ingenious recipe:

℞ Hydrarg. [perchlor.].....gr. i.
Ammon. chlorid.....gr. ij.
Aque.....℥iij.
Pulv. glycyrrh.....℥i.
Mellis.....q.s.
M. Fiat pilulæ viij.

Dissolve the sublimate in solution of ammonium chloride.

We have no right as dispensers to use an extraneous chemical unless ordered, but here the principle of solution was recognized. Variations of the formula will offer no difficulty; only in the first instance use a harmless solvent.

Mercurous Chloride. — Hydrargyri submurios, calomel.

℞ Hydrarg. submur.....gr. xxxvi.
Conf. rosæ canin.....q.s.
Pulv. tragacanth.....gr. iij.
M. Fiat pilulæ xij.

A very usual formula to which there is no objection:

℞ Hydrarg. submur.....gr. xxxvj.
Mannæ.....gr. xvij.
M. Fiat pilulæ xij.

Manna is in variable conditions; when fresh and soft to be used alone; when hard, add one or two drops of water, i. e., aquæ q.s. An excellent form, especially for larger doses. Hy-

drargyrum c. cretâ needs care, or by trituration the globules of metallic mercury will be set free.

℞ Hydrarg. c. cretâ.....gr. xxxvj.
Pulv. tragac. comp.....gr. vi.
Conf. rosæ canin.....gr. xij.
M. Ft. pil. xij.

This is decidedly the most suitable excipient. Ferri ammonio-citras, ferri ammon. citras c. quinâ, ferri potassio-tartras, ferri pyrophosphas (so called), bismuthi ammonio-citras, and all soluble scale preparations (the old ferri citras not being of the number) are, from their light nature, too bulky to be directly made into pills. Water is the aid-excipient, very few drops being sufficient. When prescribed alone, the following formula is good:

℞ Ferri ammon. citrat.....3 i.
Aq. dest.....℥iij.
Mannæ.....3 ss.
Pulv. tragac.....gr. iij.
M. Fiat pilulæ xvi.

Argentii nitras, silver nitrate, forms the exception to a powerful salt dissolved; for when in solution it is too readily affected by light. It may be made thus:

℞ Argent. nitrat.....gr. viij.
Kaolin.....℥i.
P. tragac.....gr. i.
Aq. dest.....℥x.
In pil. xij.

Ferrum redactum is very manageable with manna as an excipient. Obviously aqua destillata must be also used.

℞ Ferri redact.....gr. xxiv.
Aq. dest.....gtt. ij.
Mannæ.....gr. xij.
M. Fiat pilulæ viij.

It will be understood that these are typical forms to illustrate relative proportions of excipient to ingredient, so as to be a guide in general dispensing; and, moreover, that the proportions are not absolute and immutable, for the dispenser is not absolved by his vocation from the exercise of common sense.

Potassium iodide and bromide, the bromide and iodide of ammonium, and similar soluble crystalline substances must lose the crystalline form before they can be reduced to a pilular consistence. As a general rule, they are made thus:

℞ Potassii iodidi.....3 i.
Aq. destillat.....℥x.
Pulv. glycyrrh.....℥i.
Mucilag.....gtt. ij.
M. Fiat pilulæ xij.

The water requires some little regulation; begin with less.

M. Lascheid recommended the use of glucose, either for heavy powders or for chemicals of a pronounced desiccating nature. It undoubtedly succeeds, but its peculiarly sticky nature will prevent it from becoming a favorite excipient.

The four following recipes are in accordance with this recommendation:

℞ Pulv. rhei.....gr. xxxvi.
Pulv. jalapæ.....gr. xij.
Glucose.....q.s.
M. Fiat pilulæ xij.

℞ Pulv. ferri oxyd.....gr. xxxvi.
Pulv. glycyrrh.....gr. xij.
Glucose.....gtt. xx.
M. Fiat pilulæ xij.

℞ Ferri sulph.....3 i.
Pulv. glycyrrh.....gr. x.
Glucose.....gtt. xx.
M. Fiat pilulæ xij.

℞ Manganæ oxyd.....gr. xxiv.
Pulv. glycyrrh.....gr. xij.
Glucose.....q.s.
Misce. Fiat pilulæ xij.

All these formulæ are successful, and will suffice to show the method.

I am indebted to Professor Redwood for a knowledge of an excipient, admirable when rightly used. This is the soluble cream of tartar, which I find

applicable in many more cases than were indicated by that gentleman, a circumstance which enhances the value rather than it detracts from the credit of the original introduction.

Dr. Paris, in an essay which has ceased to guide modern pharmacists, treats in one part of the modifying influence which substances mutually exert upon each other; as one illustration, he demonstrates how that boracic acid added to cream of tartar not only results in a soluble preparation, but in itself promotes the activity of medicines with which it is incorporated. So that here we have a good excipient and a good thing also. The mode of using it is simple but not generally understood. It is a scale preparation eagerly combining to form a sort of vitreous mass when touched with water. This action is used mechanically in forming a pill mass where chemical substances are concerned; by virtue of this energetic union; the most intractable pulverulent substances are drawn together and united.

Commercial soluble cream of tartar, in large scales, require a larger addition of water than that indicated here. The bulk is not appreciably increased.

By experiments performed, *per se*, it is soon discovered that it is inconveniently affected by a damp atmosphere, and though it retains its tenacity would not be suitable for a cement. It becomes, therefore, necessary to complete the process by a minute quantity of tragacanth, considerable judgment being needed by the dispenser as to the relative additions both of water and of pulvis tragacanthæ. Practice will remove this difficulty, and in judicious hands soluble cream of tartar will be found invaluable. The general formula, subject to modification, is as follows:

Substance	1
Sol. crem. tart.	1
Aq. dest. q.s. to make a plastic mass.	
Pulv. tragac.	gr. ii. iiv.
M. Fiant pilulæ xij.	
ß Sulphur sublimat.	3 iss.
Pulv. tragac.	gr. iv.
Sol. crem. tart.	3 ss.
Aq. dest.	℥ xx.
M. Fiant pilulæ xxiv.	
ß Chloral hydrat.	3 ss.
Pulv. tragac.	gr. iij.
Sol. crem. tart.	3 ss.
Aq. dest.	℥ iij.
M. Fiant pilulæ x.	
ß Ammon. chlorid.	3 ss.
Pulv. tragac.	gr. iij.
Sol. crem. tart.	3 ss.
Aq. dest.	℥ iij.
M. Fiant pilulæ viij.	
ß Bismuthi nitrat.	3 i.
Pulv. tragac.	gr. ij.
Sol. crem. tart.	3 i.
Aq. dest.	℥ vi.
M. Fiant pilulæ xij.	
ß Zinci oxyd.	3 ss.
Pulv. tragac.	gr. ij.
Sol. crem. tart.	3 ss.
Aq. dest.	3 viij.
M. Fiant pilulæ viij.	

As alternative formulæ, the following may be recommended:

<i>Sulphur.</i>	
ß Sulph. sublimat.	3 iss.
Pulv. tragac.	gr. v.
Syr. simpl.	℥ xxx.
M. Fiant pilulæ xxiv.	
<i>Bismuth.</i>	
ß Bismuthi nitrat.	3 i.
Pulv. tragac.	gr. iij.
Syr. simpl.	℥ x.
M. Fiant pilulæ xij.	
<i>Zinc.</i>	
ß Zinci oxyd.	3 ss.
Pulv. tragac.	gr. ij.
Syr. simpl.	℥ x.
M. Fiant pilulæ viij.	

There remain certain chemical substances which from their nature, and from decomposition, which might be formed, must be grouped together in a separate series.

A practised dispenser attains the art of combining most ordinary remedies into a pilular form; but in the instances now named, knowledge and experience, and the study of repeated failure are requisite to produce a good result.

Blaud's Niemeier's pill belong to this group.

The Paris Codex meets the difficulty of combining ferrous sulphate with potassium carbonate by using the dried powders of each, and protecting the former by mixing it in solution of gum arabic and syrup.

Others suggest that 5 grains of ferrous sulphate exsiccata are equal to 8 grains of the crystals.

The formula in general use is:

ß Ferri sulphat.,	
Potass. subcarb.	3 ss.
M. Fiant pilulæ xij.	

The whole difficulty consists in the chemical formula for ferrous sulphate, $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$.

Seven equivalents of water would naturally act on a deliquescent salt. They are made thus:

ß Ferri sulphat.	3 ss.
Glycerin	℥ iij.
Mix in a mortar.	
ß Potass. subcarb.	3 ss.
Glycerin	℥ ij.

Mix on a slab: add both together, with finally,

Pulv. tragacanthæ.	gr. vi.
-------------------------	---------

An excellent pill-mass is the result; easily manipulated.

Potassium permanganate ordered in a pilular form has given rise to much controversy.

Mr. Barnard Proctor's formula leaves nothing to desire.

ß Potass. permangan.	gr. xxiv.
Kaolin.	gr. xxxvj.
Aque.	gtt. xvij.
M. Fiant pilulæ xij.	

As kaolin varies in physical condition, more or less water may be required. In this particular instance 25 minims of water have been used.

There was a tyro who tried to make these much paragraphed pills. First they crumbled into powder; then they turned up as rich gravy soup; then they blew up; and so did his master.

At last the expedient was resorted to of a fair amount of extract of gentian. "How did they go?" inquired his chief. "They went out," was the reply. And that was the one thing needful.

Phosphorus and its preparations have always had for me a sort of personal charm, as I so long had to work in the ancient laboratory where the Hon. Robert Boyle pursued his chemical researches, and where Ambrose Godfrey succeeded in producing "that marvellous lumen" in a "right glacial" form.

I had the honor of being the last to use the surviving furnace, which has been finally displaced to make room for the entrance to the church of Corpus Christi, situate in Maiden Lane.

Nothing would more have pleased the old laboratory man, or have surprised him less, than if the operation had been a failure, for he believed himself to be the only existing man who could light a furnace fire.

Fond as I am of the literature of phosphorus, one is bound to acknowledge that phosphoric acid has been the best outcome of the much vaunted remedy; and phosphorus pills are only in exceptional demand.

Many ingenious formulæ have been devised, but as they belong to the literature of the subject they must be omitted here. They depend on effecting the solution of phosphorus in a non-oxidizable solvent, and forming into pills with a non-oxidizable excipient. Messrs. Allen & Hanburys and Mr. Millhouse have furnished good recipes.

Mr. Alfred Clay Abraham has kindly sent me particulars respecting the mode of dispensing his phosphorus pill-mass, not hitherto published.

The formula for the mass is called

Tolu Phosphoratum.

Washed balsam of Tolu	960 grains.
Phosphorus, pure.	40 grains.

Dissolve by means of the water-bath (with the usual precautions) in water, well mixing *under water*, when of convenient temperature, with the hands. Complete thus for dispensing purposes.

ß Tolu phosphorati.	gr. 200.
Pulv. saponis,	
Pulv. acaciæ.	3 ss. gr. 184.
Glycerin. c. tragac.	q.s.
Misce. Fiant pilulæ 256.	

Add a drop or two of some volatile liquid immediately after crushing the tolu in the mortar, and before the addition of the excipient.

One grain of tolu phosphoratum contains $\frac{1}{4}$ of a grain of phosphorus, and the pills when made contain $\frac{1}{4}$ of a grain.

This formula has been in use since 1878, adjusting the quantities for different strengths. Supposing the phosphorus not to be in a state of absolute solution, by examination under the microscope 10,000 particles of phosphorus are found to exist in one twenty-fifth of a grain.

Samples made by Mr. Abraham are on the table, and I am obliged to that gentleman for his courtesy.

We are now in a position to derive advantage from a short list of excipients drawn up for convenient reference.

It is not by any accidental arrangement that they are placed here. A dispenser must learn by positive hand-work the best method of making pills, and not be engaged in a perpetual chase after some particular excipient. Already it has been shown, how much their effective action depends on attendant circumstances. Those only have been quoted which have been tested in my own demonstrations and for which I can answer. For the rest I must refer you to well-known compilations, though I have often had to regret the traditional sort of information many of these books afford. Where brackets are inserted all contained within is to be used as excipient.

Aloes.	Mucilage.
	Dec. aloes comp.
Ammonium chloride.	Sol. crem. tart.
Argenti nitras.	Sacch. lactia.
	Manna.
Bebeeræ sulph.	Sacch. lactia.
	Tragac. paste.
	Proof spirit.
	P. tragac. comp.
	Sol. crem. tart.
Bismuthi nitras.	P. tragac.
	Aq. dest.
Blaud's pills (Ferri sulph., potass. carb.). <i>Not water.</i>	Glycerin, dissolve separately.
	Pulv. tragac.
Copaiva balsam.	Magnes. calo., allowing time.
	Magnes. calo.
	Cera flava.
	Sacch. lactia.
Calcium sulphide.	P. glycerh.
	Tragac. paste.
Calomel.	Cons. ros. canin.
	P. tragac.
	Manna.
Camphor, small.	Tragac. paste.
	Sapo dur.
	Ol. ricini.
	Sapo dur.
	Proof spirit.
	Sapo dur.
	Mucilage.
	Pulv. glycerh. gr. i. : ℥ i.
Carbolic acid.	Mucilage.
	Sol. crem. tart.
Chloral hydrate.	Pulv. tragac.
	Aq. dest.

Creasote. 1	Sapo dur.
" 2	Cera flava.
" 3	Pulv. glycyrrh.
" 4	Mucilage.
	Calc. phosphate.
Cupri ammon. sulph.	Sapo dur.
	Pulv. glycyrrh.
	Glycerin paste.
	Sol. crem. tart.
	Pulv. tragac.
Essential oils	Aq. dest.
"	Cera flava.
"	Sapo dur.
"	Magnes. calc.
"	Sapo dur.
"	Calc. phosph.
Ext. cannabis ind.	Magnes. calc.
	Pulv. tragac. c.
	Heat in steam-bath
Fellis bovini	Pulv. tragac.
	Mucilag. tragac.
	Glycerin.
Gallic acid	Pulv. tragac. c.
	Cons. ros. canin.
Hydrarg. c. cretâ.	Pulv. tragac.
Intractable pills.	Glycerin.
Jalap.	Tinct. jalapæ.
	Syrup.
Ol. crotonis.	Pulv. glycyrrh.
	Mucilage.
Ol. terebinth.	Magnes. calc.
	Cera alba.
	Glycerin.
Pepsin.	Pulv. tragac.
Pil. hydr. subchlor.	Ol. ricini.
	Aq. dest.
Potass. iodid.	Pulv. glycyrrh.
	Mucilage.
Potass. permangan.	Kaolin.
	Aq. dest.
Rheum.	Mel liquid.
"	Glycerin.
"	Aq. dest. (4).
"	Sol. crem. tart.
Sulphur.	Pulv. tragac.
	Aq. dest.
	Glycerin.
Tannic acid.	Pulv. tragac. c.
	Calc. phosphas
Ung. hydrargyri et	precip.
similia.	Glycerin.
Zinci oxyd.	Tragac. paste.
	Sol. crem. tart.
"	Pulv. tragac.
"	Aq. dest.

Mucilage not to be used with tincture.

Glycerin not to be used with mucilage.

Cons. rosæ not to be used with ferrous sulphate, tannic acid, and vegetable astringents.

Water not to be used where chemical decomposition might ensue.

Heat not to be used for volatile substances.

Steel knives not to be used with hydr. bichlorid.

Magnesia not to be used with ext. colchici acet.

I cannot quit the subject without alluding to a danger to which the dispenser should never be exposed, called upon as he is sometimes to combine ingredients which may have a violent reaction. These may be termed explosive remedies. It is strange how very sensitive prescribers are on this point. When forgetful of the laws of chemistry they have ordered some dangerous compound, in preparing which a mortar is sent flying and an assistant injured, they immediately remark on the necessity for improved education on the druggist's part, and never entertain the notion that when a professional man desires fireworks he should send them to be manufactured by those who are devoted to that branch of industry. The dispensing art to be employed is, never to combine these substances direct, and to render them separately inert. Sometimes we have a definite powder ordered which we must use for the purpose.

B Creasoti	xx.
Potass. chlorat	3 ss.
Pulv. rhei	3 ss.
M. Fiant pilulæ	xx.
Made thus—	
B Creasoti	xx.
Pulv. rhei	gr. xv.

Mix in a mortar—

B Potass. chlorat	3 ss.
Pulv. rhei	gr. xv.

Mix on a slab; add to the contents of the mortar, and make up with glycerin.

To avoid error, do not use two mortars but follow the directions given as they stand.

B Argenti oxyd	gr. vi.
Creasoti	vi.
M. Fiant pilulæ	vi.

Made thus—

B Creasoti	vi.
Saponis	gr. vi.

Mix in a mortar—

B Argenti oxyd	gr. vi.
Pulv. glycyrrh.	gr. xij.

Mix on a slab, and add to the contents of the mortar. Make up with glycerin, or glycerin and tragacanth paste; never with syrup or mel liquidum, or with any other excipient which would easily yield up its carbon. Very little, sometimes none, is wanted. With metallic oxides, which may be suspected of producing extreme chemical action, carefully avoid the presence of a reducing agent. Proceeding by this method we have a neutral, and a protected mass, and under such conditions safety is secured.

Now let me endeavor to bring these disquisitions to an end. The gilded pill has ceased to be an actuality, and "to gild the bitter pill" has no longer any meaning as a metaphor. Pills are silvered by means of mucilage and silver leaf, for which process there is no equal apparatus to an ordinary stoneware covered pot; wooden boxes and other articles supplied are comparatively useless, as the surfaces are soon roughened. Two are wanted: one of a not less capacity than two ounces; and a second smaller one, as finisher. The hard polished surface gives a glaze, to be obtained by no other means.

Compound decoction of aloes is far superior to mucilage where aloetic and resinous compounds are concerned, and pills containing extract. A minute quantity is needed, and the silvering must be rapidly conducted. There is an economy of silver leaf.

Two coatings, or varnishes are used; one of ether and tolu, not to be recommended in our damp and variable climate. The best formula is the second one.

Æther. rect.	3.
G. sandarach.	1.

Pills are usually sent out with a certain amount of powder, the less the better. Much powder suggests a wish to cover bad dispensing. Avoid colored powders, especially pulv. glycyrrhizæ, which has a patent medicine look and is unsightly.

A good general form is—

Rad. althææ,	
P. cretæ gallicæ,	
P. marantæ	aa pp. aquales.

French chalk is objectionable as being smeary and too heavy. Nothing is equal, as far as my opinion goes, to pulvis marantæ siccatus.

I refer you to periodical literature, and specially to American works on pharmacy which are beyond praise, for full directions respecting sugar-coated pills and analogous contrivances. I do not think the retail pharmacist can compete in these matters with the skill of the wholesale manufacturer.

I would ask you not to accept as final or all-conclusive evidence founded on disintegration. A chemist throws a pill into a glass of water, and watches the ingredients slowly separate into an uncombined condition. If by this is meant that we can ascertain whether or not a pill has been injured in the making, all is well. But it is not well if from that we pronounce judgment on its physiological and therapeutical effects, for the lining membranes of

the stomach and intestines are not vitreous, and there are stronger agencies at work than an ounce of aqua destillata.

Were I to enumerate the long list of pills famed in charlatanism or medicine, even your admirable patience would be exhausted; nor can I relate how, while the old philosophers failed to transmute the baser metals into gold, in modern times others have hit upon the secret with regards to pills. —*Pharm. Jour.*, June 13th, 1885.

Use of Osmic Acid in Peripheral Neuralgias.

DR. GEO. W. JACOBY, of New York, reports in the *N. Y. Medical Journal* of August 1st eighteen cases of peripheral neuralgias treated with local injections of osmic acid by the method suggested by Eulenberg in 1883. His statistics show eight cured, two improved, and eight unaffected. Five of the eight cases cured were sciaticas. All the cured cases were old. Two of the unimproved cases were old, the remainder being recent cases. He concludes that the sciatic nerve is the most readily affected by the remedy, and that inveterate cases are more apt to be favorably affected by the remedy than recent cases. In using the acid, Dr. Jacoby used for each injection .50 to 1.00 gramme of a 1% solution of osmic acid in water. The preparation was that known as osmium tetroxide (OsO₄), or, among histologists, as osmic acid. The substance termed hyperosmic acid by Neubauer and others is probably the same. The solution, when exposed to light, rapidly becomes decomposed, turning dark and ultimately quite black, and is then, probably, inert. It should be dispensed in an opaque bottle, and in small quantities.

The injections should be made as near as possible to the seat of pain, and into the connective tissue surrounding the affected nerve. The pain following the injection is often severe, but usually lasts but a few seconds. Occasionally swelling about the puncture persists for several days. Excepting a black spot at the entrance of the needle, no discoloration is caused by the injection. No constitutional symptoms follow.

Saponulates.

E. DIETRICH, of Helfenberg, Germany, gives the following formulas for a variety of medicated soaps which he employs in the treatment of certain skin diseases.

Balsam of Peru Saponulate (for itch).

Dialyzed stearin soap	5 parts.
Dialyzed oil soap	2 "
Alcohol (90%)	82½ "
Balsam of Peru	10 "
Pure caustic soda	½ "

Dissolve and filter. The caustic soda is added, owing to the need for an excess of alkali to preserve the compound.

Carbolic Saponulate.

Dialyzed stearin soap	4 parts.
Dialyzed oil soap	1 part.
Alcohol	90 parts.
Carbolic acid	5 "

Tar Saponulate.

Dialyzed stearin soap	5 parts.
Dialyzed oil soap	2 "
Alcohol	81½ "
Norway tar	10 "
Oil of lavender	1 part.
Caustic soda	½ "

A Tar and Sulphur Saponulate is made like the preceding, using 74 parts of alcohol, and with the addition of 5 parts of glycerin, 2 parts of sulphide of sodium, and 1 part instead of ½ part of caustic soda.

Salicylic acid decomposes the soap, and the iodide of mercury and potassium is the only mercurial preparation which can be employed. —*Chem. and Drugg.*

Popular Perfumes.

THE subjoined formulæ have been supplied to the *Chemist and Druggist* (July, 1885) by a manufacturer who is not now in the business, but who states that when sold they gave general satisfaction.

Note.—We have rearranged the series in a different order, and have adopted a more uniform and consistent nomenclature, without otherwise altering the formulæ.

I. SIMPLE EXTRACTS.

1. *Extract Ambergris.*

Ambergris..... 2 drch.
Alcohol..... 25 oz.

Note.—We believe the author, in all cases, means solids to be weighed and liquids to be measured. British weights and measures are, of course, understood.

2. *Extract Cassie.*

Cassie Pomade, cut up small.. 1 lbs.
Alcohol..... 8½ pts.

Place in a wide-mouthed covered jar; let stand one month, stirring daily.

3. *Extract Cedar.*

Oil Cedar..... 1 oz.
Alcohol..... 80 oz.

4. *Extract Civet.*

Civet..... 1 drch.
Orris root, powd..... ½ oz.
Alcohol..... 20 oz.

Rub the civet with the orris in a mortar; place in a stoppered bottle with the alcohol. Let stand twenty-one days, frequently shaking.

5. *Extract Geranium.*

Oil Geranium, French... 2 drch.
Alcohol..... 30 oz.

6. *Extract Jasmine.*

Jasmine Pomade, No. 24,
cut small..... 7 lbs.
Alcohol..... 8 pints.

Place in a wide-mouth covered jar; let stand one month, frequently shaking. Then add:

Extract Storax..... 4 oz.

and stir frequently.

7. *Extract Musk.*

Pod Musk..... 150 grains.
Alcohol..... 20 oz.

8. *Extract Neroli.*

Oil Neroli..... 140 min.
Alcohol..... 30 oz.

9. *Extract Orange.*

Orange Pomade, cut small.. 7 lbs.
Alcohol..... 8½ pints.

Macerate in a wide-mouthed covered jar during one month, frequently stirring.

10. *Extract Orris.*

Orris root, crushed..... 7 lbs.
Alcohol..... 8 pints.

Macerate in a wide-mouthed covered jar during one month. Then pour off the clear liquid, express the remainder, and filter.

11. *Extract Patchouly.*

Oil Patchouly..... 80 min.
" Rose..... 20 "
Alcohol.....

12. *Extract Rose.*

Rose Pomade, cut small.. 7 lbs.
Alcohol..... 8 pints.

Operate as in No. 9.

13. *Extract Rose, Triple.*

Oil Rose..... 1½ drch.
Alcohol..... 30 oz.

14. *Extract Santal.*

Oil Santal..... 3 oz.
Ext. Rose, triple..... 10 "
Alcohol..... 90 "

15. *Extract Storax.*

Storax..... 1 oz.
Alcohol..... 20 "

16. *Extract Tonka.*

Tonka Beans, crushed... 1 oz.
Alcohol..... 25 "

Macerate three weeks, frequently shaking.

17. *Extract Tuberose.*

Tuberose Pomade, cut small.. 7 lbs.
Alcohol..... 8 pints.
Operate as in No. 9.

18. *Extract Vanilla.*

Vanilla, crushed..... 1 oz.
Alcohol..... 25 "

19. *Extract Verbena.*

Oil Verbena..... 160 min.
" Bergamot..... 60 "
Alcohol..... 18 oz.

Dissolve and add

Rose Water..... 3 "

20. *Extract Vettiver.*

Oil Vettiver..... 1 oz.
Alcohol..... 4 pints.

21. *Extract Violet.*

Violet Pomade, cut small, 7 lbs.
Alcohol..... 8½ pints.

Operate as in No. 9.

II. COMPOUND EXTRACTS.

22. *Albert Edward Bouquet.*

Jockey Club..... 10 oz.
Ess. Bouquet..... 10 "
Heliotrope..... 6 "

23. *Eau de Cologne.*

Oil Bergamot..... 60 min.
" Lemon..... 60 "
" Lavender, Engl..... 30 "
" Neroli..... 40 "
" Citron..... 10 "
Alcohol..... 16 oz.
Orange Flower Water... 4 "

[Since both oil of lemon and oil of citron are mentioned above, the last-named is without doubt what is otherwise known as oil of lime, the best of which comes from the island of Montserrat.]

24. *"Ess. Bouquet."*

Extract Rose..... 30 oz.
" Tuberose..... 25 "
" Cassie..... 20 "
" Orange..... 10 "
" Violet..... 20 "
" Orris..... 20 "
" Vanilla..... 18 "
" Civet..... 4 "
" Musk..... 3 "
" Ambergris..... 1 "
Oil Bergamot..... ½ "
" Lemon..... ½ "
" Rose..... 45 min.

25. *Florida Water.*

Oil Lemon..... 6 oz.
" Lavender, Engl..... 8 "
" Lemongrass..... 2 "
" Cloves..... 4 "
Alcohol..... 4 gall.
Distilled Water..... 1 "

26. *Frangipanni.*

Extract Rose..... 20 oz.
" Orange..... 10 "
" Cassie..... 16 "
" Jasmine..... 20 "
" Orris..... 30 "
" Violet..... 35 "
" Tuberose..... 20 "
" Vanilla..... 16 "
" Tonka..... 12 "
" Civet..... 5 "
" Musk..... 8½ "
" Ambergris..... 1 "
Oil Vettiver..... 10 min.
" Santal..... 10 "
" Bergamot..... 130 "

Oil Citron (see under No. 23)..... 80 min.
" Neroli..... 45 "
" Rose..... 45 "
" Geranium, French... 50 "

27. *Guards' Bouquet.*

Extract Neroli..... 12 oz.
" Musk..... 6 "
" Rose..... 30 "
" Orange..... 20 "
" Vanilla..... 12 "
" Orris..... 20 "
Oil Cloves..... 40 min.
" Bergamot..... 65 "
" Geranium, French... 45 "
" Rose..... 35 "

28. *Heliotrope.*

Extract Vanilla..... 10 oz.
" Rose..... 20 "
" Orange..... 12 "
" Orris..... 16 "
" Musk..... 3 "
Oil Almond, essential.. 18 min.
" Rose..... 28 "

29. *Jockey Club.*

Extract Rose..... 20 oz.
" Cassie..... 13 "
" Jasmine..... 13 "
" Violet..... 20 "
" Orris..... 20 "
" Tuberose..... 16 "
" Civet..... 4 "
" Musk..... 2 "
Oil Bergamot..... 1 "
" Rose..... 45 min.

30. *Jonquille Extract.*

Extract Jasmine..... 20 oz.
" Orange..... 10 "
" Tuberose..... 20 "
" Vanilla..... 5 "
" Storax..... 4 "
" Violet..... 7 "
Oil Rose..... 16 min.

31. *Kiss-me-quick.*

Extract Jonquille (No. 30), 40 oz.
" Orris..... 30 "
" Tonka..... 20 "
" Rose..... 40 "
" Cassie..... 20 "
" Violet..... 20 "
" Tuberose..... 20 "
" Civet..... 7 "
Oil Citronella..... 80 min.
" Bergamot..... 60 "
" Verbena..... 15 "
" Patchouly..... 10 "
" Rose..... 45 "

32. *Lavender Water.*

Oil Lavender, Engl..... 2 oz.
" Bergamot..... ½ "
Extract Millefleurs (No. 38) ½ "
" Maréchale (No. 36) ½ "
" Musk..... ½ "
Oil Rose..... 5 min.
Alcohol..... 32 oz.
Orange Flower Water... 4 "
Distilled Water..... 2 "

33. *Linaloe (Lignaloe).*

Extract Orris..... 10 oz.
" Vanilla..... 10 "
" Jasmine..... 15 "
" Rose..... 20 "
" Civet..... 3 "
" Rose, triple..... 15 "
Oil Linaloe..... 1½ "

34. *Lily of the Valley.*

Extract Tuberose..... 10 oz.
" Jasmine..... 5 "
" Orange..... 5 "
" Vanilla..... 5 "
" Cassie..... 5 "
" Rose..... 10 "
" Violet..... 5 "
" Civet..... 2½ oz.
Oil Almonds, essent... 5 min.
" Rose..... 10 "

35. *Magnolia.*

Extract Rose..... 40 oz.
" Orange..... 20 "
" Tuberose..... 16 "
" Violet..... 16 "
" Jasmine..... 10 "
" Civet..... 4 "
Oil Citron (see under No. 23) 1½ drch.
" Citronella..... 10 min.
" Almonds, essent... 10 "
" Rose..... 20 "

36. *Maréchal Bouquet.*

Extract Rose, triple.....	16 oz.
" Rose.....	20 "
" Orange.....	20 "
" Violet.....	20 "
" Vettiver.....	10 "
" Cassie.....	20 "
" Orris.....	20 "
" Vanilla.....	16 "
" Tonka.....	10 "
" Jasmine.....	20 "
" Neroli.....	10 "
" Musk.....	4 "
" Civet.....	5 "
Oil Cloves.....	30 min.
" Santal.....	30 "
" Bergamot.....	60 "
" Geranium, French.....	35 "
" Lemon.....	30 "

37. *May Flowers.*

Extract Rose.....	18 oz.
" Jasmine.....	10 "
" Orange.....	10 "
" Cassie.....	12 "
" Vanilla.....	10 "
" Violet.....	10 "
" Storax.....	2 "
" Civet.....	1 "
Oil Almonds, essent.....	13 min.
" Rose.....	17 "

38. *Millefleurs.*

Extract Rose, triple.....	20 oz.
" Rose.....	30 "
" Tuberose.....	10 "
" Jasmine.....	16 "
" Orange.....	10 "
" Cassie.....	16 "
" Violet.....	20 "
" Cedar.....	5 "
" Vanilla.....	7 "
" Musk.....	3 "
" Civet.....	4 "
" Tonka.....	5 "
Oil Almonds, essent.....	10 min
" Neroli.....	10 "
" Cloves.....	10 "
" Bergamot.....	60 "
" Patchouly.....	30 "
" Geranium, French.....	30 "

39. *Myrtle Flowers.*

Extract Orange.....	20 oz.
" Tuberose.....	10 "
" Rose.....	30 "
" Jasmine.....	15 "
" Vanilla.....	5 "
" Civet.....	2 1/2 "

40. *New Mown Hay.*

Extract Rose, triple.....	16 oz.
" Geranium.....	20 "
" Jasmine.....	20 "
" Orange.....	20 "
" Rose.....	30 "
" Violet.....	20 "
" Tonka.....	30 "
" Vanilla.....	10 "
" Civet.....	5 "
" Musk.....	1 "

41. *Opoponax.*

Pod Musk.....	1/2 drch.
Vanilla, crushed.....	1/2 oz.
Tonka Beans, crushed.....	1 "
Alcohol.....	25 "

Macerate one month, then add:

Extract Orris.....	10 oz.
" Rose.....	10 "
" Cassie.....	5 "
" Orange.....	5 "
" Violet.....	16 "
Oil Citronella.....	13 min.
" Citron (see under No. 28).....	60 "
" Lemon.....	15 "
" Bergamot.....	60 "
" Patchouly.....	30 "
" Rose.....	20 "

42. *Rondeletia.*

Oil Rose.....	12 min.
" Lavender, Eng.....	60 "
" Bergamot.....	30 "
" Cloves.....	30 "
Grain Musk.....	4 grains.
Ambergris.....	12 "
Alcohol.....	10 oz.
Distilled Water.....	2 "

43. *Spring Flowers.*

Extract Rose.....	10 oz.
" Violet.....	10 "
" Cassie.....	8 "
" Civet.....	3 "
" Rose, triple.....	4 "
Oil Bergamot.....	60 min.

44. *Stephanotis.*

White Rose (No. 47).....	20 oz.
Extract Jasmine.....	10 "
" Civet.....	1/2 "
" Rose.....	7 min.

45. *Wall Flowers.*

Extract Cassie.....	10 oz.
" Orange.....	20 "
" Rose.....	20 "
" Orris.....	10 "
" Vanilla.....	10 "
" Civet.....	8 1/2 "
Oil Almonds, essent.....	10 min.
" Rose.....	20 "

46. *West End Bouquet.*

White Rose (No. 47).....	15 oz.
Extract Violet.....	10 "
" Jasmine.....	7 "
" Civet.....	1/2 "

47. *White Rose.*

Extract Rose, triple.....	7 oz.
" Rose.....	13 "
" Violet.....	7 "
" Cassie.....	4 "
" Jasmine.....	4 "
" Patchouly.....	8 "

48. *Wood Violet.*

Extract Cassie.....	40 oz.
" Rose.....	30 "
" Violet.....	50 "
" Jasmine.....	20 "
" Orris.....	20 "
" Civet.....	5 "
Oil Almond, essent.....	15 min.
" Rose.....	35 "

49. *Ylang Ylang.*

Oil Ylang Ylang.....	1/2 oz.
" Bergamot.....	1/2 "
" Pimento.....	1/2 "
Alcohol.....	26 "
Extract Orris.....	40 "
" Rose.....	40 "
" Tuberose.....	20 "
" Cassie.....	20 "
" Jasmine.....	20 "
" Violet.....	25 "
" Orange.....	10 "
" Vanilla.....	16 "
" Civet.....	4 "
" Musk.....	3 "
" Storax.....	3 "
" Rose, triple.....	20 "

The Poppy in Persia.*

FROM time immemorial opium has been grown in Persia in the neighborhood of Yezd, and enough was always produced there to supply the demands of the native market. Nine out of ten of the aged in Persia take from 1 to 5 grains of the drug daily; it is largely used by the native physicians, and a considerable export was kept up *vid Meshed* to Central Asia; the crop was considerable. During the cotton famine caused by the American war, the attention of the Persian ryot was turned to the cultivation of the cotton-bush; but Persian cotton soon became hardly worth growing, save the small amount required for home manufacture, and the villagers throughout the centre and south gradually turned their attention to the cultivation of the poppy. Year by year this crop has become a more favorite one; and the result has been that grain-growing has been much neglected, with the effect of raising the price in some districts. In the neighborhood of Ispahan, as far as the eye can reach, nothing but fields of poppies are to be seen, with a small patch here and there of wheat or barley, which the cultivator produces for his own use or to give some rest to his land. The white variety of the poppy is the one that is grown. It is sown broadcast and very thickly, and when it first comes up resembles a very abundant crop of dandelions. This redundancy is soon reduced by the ryot, who with a short curved knife hacks away superfluous plants, till those that are left stand some six inches from each other. This reduc-

* From the *St. James Gazette*.

ing process has to be gone through many times, and the ground kept clear of weeds until the plant is six inches high. The fields are also irrigated once a week until the buds are about to burst into bloom. It is this irrigation probably that accounts for the inferiority in the percentage of morphia in Persian opium. And, now that the poppies are in flower and the petals are about to fall, the ryots, under the direction of men from the neighborhood of Yezd, who travel all over Persia to superintend the gathering of the crop and its subsequent preparation, begin to collect the opium from the plant. This is done by scoring the seed-vessels with a small three-bladed knife, which makes three gashes an eighth of an inch apart and three-quarters of an inch long. The operation is performed in the afternoon. From these gashes the opium exudes in tears, which are collected at early dawn by scraping with a piece of glass or a knife. If unfortunately a heavy shower of rain should fall, a large proportion of, or even all, the opium may be lost. This gashing and scraping is repeated a second and even a third time. The poppies, after the opium is extracted, are used as fodder. The ryot often has advances (at heavy interest) made to him upon his crop, and at times the speculator is severely bitten.

In the old days, when opium was purchased by rule of thumb, and passed through several hands before it reached the manufacturer, the fresh opium was much adulterated; and it was this adulteration that gave the Persian opium the bad name it so long retained in the English market. But an enterprising English firm sent one of its partners to Ispahan, and that energetic gentleman succeeded in making the Persians understand that honesty is the best policy. The brand of the firm he represented was a guarantee of the purity of the manufactured article; and as the imports of the firm to this country were always of exactly the same standard as the sample that preceded them, Persian opium of their brand became a regular and salable commodity. Already Persian opium has driven that of Turkey out of the great market of China; but the quantity of morphia contained in it is far less than that of the drug grown in India. Lately the average price of Persian opium has been 16s. a pound in London, wholesale. Of course, the Armenian middleman continues to adulterate the drug; but he hardly finds a profit in doing so, and his wares seldom leave the country.

When the first supplies of the drug begin to arrive at the "godown" of the merchant, they come in a semi-fluid mass, generally in a state of fermentation, giving out the characteristic smell of the drug and therewith an odor resembling that of rotten apples. The opium is generally brought in copper pots and earthen jars—usually they are cooking utensils impressed into the service. As the opium arrives it is poured into copper pans, some of which will hold as much as 5 cwt. Workmen are engaged at so much a day, or in gangs who are paid so much per chest. The daily wage varies from two to five kerans (a keran being 9d.). The liquid portion of the opium is boiled down and returned to the pans, the whole is then beaten up till it is of the consistence of strawberry jam freshly made. And now begins the opium manufacture—the *teriak-mali*, literally opium rubbing. Thin planks, a yard long and a foot wide, are smeared with the paste, first longitudinally, then horizontally, by means of wooden spatulas. As each plank is covered it is placed on end in the strong sun, and when sufficiently dry the opium is scraped off for rolling into cakes. If the opium is very moist, or the sun very weak, this pro-

ss has to be repeated. The opium now kneaded into cakes of a pound, drachms over being allowed for loss weight in transit. The cakes have the shape and appearance of a large square bun. They are varnished with some of the liquor or with a composition, and when quite dry are stamped with the maker's name. And now each cake is wrapped in paper, and laid in cases made as strong and tight as possible, as the duty is levied per case. The cases are sewn up in raw hides, or dammered—i. e., packed in tarpaulin.

It does not appear that the moderate use of Persian opium in the country itself is deleterious. Opium-eaters there are, it is true, but they are few. Opium smoking is almost unknown; and opium when smoked is, as a rule, smoked by a native doctor's prescription. The opium pill-box, a tiny box of silver, is as common in Persia as the snuff-box was once with us. Most men of forty among the upper and middle classes use it. They take from 1 to 1½ grain, divided into two pills, one in the afternoon and one at night. Travellers, too, almost invariably take it.

In 1871 the value of the export of opium from Persia was 696,000 rupees. In 1881 it had increased to 8,470,000 rupees, and the increase has been steady each year. Probably this increase will continue, and ultimately Indian opium will find a rival, and our revenue in India will be thus much reduced. For the Chinese market a certain portion of oil is used in the preparation of Persian opium. The preparation of the opium for market is a very anxious time with the merchant. He has to be constantly in and out, and is obliged to pay watchers, and pay them well, to keep pilferers from his goods. The laborers engaged in the *teriak-mali* are searched on leaving, as a matter of course; but they generally manage to add considerably to their wages by what they can purloin. This is their "cabbage," or *modakel*—a word much in use in Persia, where as a rule a man's pay is often much less than his *modakel*. A man's pay is usually known, and the common questions among Persians are, "What is his pay?" and "What is his *modakel*?" A servant's *modakel* is what he can take from the tradespeople, generally 10 per cent; a governor's *modakel* what he can exact from the taxpayers over and above the taxes; the Shah's *modakel* what he can sell the governorships for; and so on.

The manufacture of opium is rude in the extreme, and opportunities for speculation many. It has been suggested to rub the opium on a hot plate with a chocolate-making machine, but no one has tried it. Were it not for the opium-growing, the king's ryots would find it hard to pay their taxes. But the indiscriminate cultivation of this valuable crop, to the exclusion of cereals, tends to render bread and horse-feed dearer; and if the cultivation of the poppy continues to spread as it has done in the last twenty years, Persia will cease to be, what it is now, the cheapest place to live in in the world.

Removal of Micro-Organisms from Water.

PERCY F. FRANKLAND recently reported to the Royal Society of England a series of experiments upon the purification of water containing micro-organisms which has many features of practical importance.

The method of investigation consisted in determining the number of organisms present in a given volume of the water before and after treatment, the determinations being made by Koch's process of gelatin-culture on glass-plates.

Treatment of Water by Filtration.—The filtering materials examined were greensand, silver sand, powdered glass, brick-dust, coke, animal charcoal, and spongy iron. These materials were all used in the same state of division, being made to pass through a sieve of 40 meshes to the inch, and in columns of 6 inches in depth. The following results were obtained:—

	No. of organisms in 1 C.c. of water before filtration.	Ditto after filtration.
Greensand.....	80	0
ditto (after 13 days)	8,198	1,071
ditto (after 1 month)	1,281	779
Silver Sand.....	11,282	1,012
Powdered Glass.....	11,282	793
Brickdust.....	8,112	783
ditto (after 5 weeks)	5,987	406
Coke.....	8,112	0
ditto (after 5 weeks)	5,983	86
Animal Charcoal.....	very numerous	0
ditto (after 12 days)	2,792	0
ditto (after 1 month)	1,281	6,958
Spongy Iron.....	80	0
ditto (after 13 days)	2,792	0
ditto (after 1 month)	1,281	2

Thus greensand, coke, animal charcoal, and spongy iron were at first successful in removing all organisms from the water passing through them, but after 1 month's continuous action this power was in every case lost, the improvement still effected, however, by spongy iron and coke was very great indeed, whilst the greensand and brickdust were much less efficient, and the number of organisms in the water that had been filtered through animal charcoal was greater than in the unfiltered water.

Treatment of Water by Agitation with Solid Particles.—Water was agitated with various substances (in the same state of division as above), and after the subsidence of the suspended particles, the number of organisms in the water before and after treatment was determined. 1 gramme of substance was in nearly each case shaken up with 50 C.c. of water. The agitation was in nearly all cases continued for 15 minutes, but the duration of subsidence was varied according to the length of time which it required for the water to become clear. The following results were obtained:—

	No. of organisms in 1 C.c. of water before treatment.	Ditto after treatment.
Spongy Iron (1 minute agitation, ½ hour subsidence; 5 grms. used)	609	28
Spongy Iron (15 minutes agitation, ½ hour subsidence; 5 grms. used).....	609	68
Chalk (15 minutes' agitation, 5 hours' subsidence).....	8,825	274
Animal Charcoal (15 minutes' agitation, 5 hours' subsidence) ..	8,825	60
Coke (15 minutes' agitation, 48 hours' subsidence).....	Too numerous to be counted	0
China Clay (15 minutes' agitation, 5 days' subsidence).....	Too numerous to be counted	0

In order to ascertain whether subsidence alone would diminish the number of organisms contained in the upper strata of water, bottles containing infected water were allowed to remain at perfect rest, and then the upper layers in the several bottles were tested for organisms at different intervals of time. Thus:—

Hours of rest.	No. of organisms found in 1 C.c. of water.
0.....	1,073
6.....	6,028
24.....	7,262
48.....	48,100

Thus, without agitation with solid particles and subsequent subsidence of the latter, there is no diminution, but on the contrary an increase in the

number of organisms in the upper strata of water.

Treatment of Water by Chemical Precipitation.—The effect of "Clark's process" in removing organisms from water was investigated both in the laboratory and on the large scale. In the laboratory experiments the following results were obtained:—

	Organisms in 1 C.c.
Untreated water.....	85
ditto (after 18 hours' rest).....	1,928
Water after Clark's process and 18 hours' subsidence.....	49

In a second series of experiments the following results were obtained:—

	Organisms in 1 C.c.
Untreated water.....	87
ditto (after 21 hours' rest).....	42
ditto (after 48 hours' rest).....	298
Water after Clark's process and 21 hours' subsidence.....	22
ditto (after 48 hours' subsidence).....	166

On the large scale the efficiency of the process was examined at the Colne Valley Waterworks, Bushey:—

	Organisms in 1 C.c.
Hard water.....	329
Water after softening and 2 days' subsidence.....	4

A recent modification of Clark's process devised by Gaillet and Huet was also examined:—

	Organisms in 1 C.c.
Hard water.....	182
Soft water.....	4

Thus a very great reduction in the number of organisms present in a water may be effected by submitting it to Clark's process. It appears also that the clear water should be removed as rapidly as possible from the precipitated carbonate of lime, as otherwise the organisms may become again distributed through the water.

General Conclusions.—Of the substances experimented with, only greensand, coke, animal charcoal, and spongy iron were found to wholly remove the micro-organisms from water filtering through them, and this power was in every case lost after the filters had been in operation for one month. With the exception of the animal charcoal, however, all these substances, even after being in action for one month, continued to remove a very considerable proportion of the organisms present in the unfiltered water, and in this respect coke and spongy iron occupy the first place.

The results obtained by agitating water with various solid materials show that a very great reduction in the number of suspended organisms may be accomplished by this mode of treatment, and the complete removal of all organisms by agitation with coke is especially worthy of notice.

Again, the results obtained with Clark's process show that we possess in this simple and useful mode of treating water a means of greatly reducing the number of suspended organisms.

Thus, although the production in large quantities of sterilized potable water is a matter of great difficulty, involving the continual renewal of filtering materials, there are numerous and simple methods of treatment which secure a large reduction in the number of organisms present in water. —Nature.

An Oily Tincture of Iodine.

GRENEL's formula is:—

Iodine.....	10 parts.
Castor oil.....	45 "
Strong alcohol.....	45 "

—Arch. der Pharm., and Chem. and Drugg.

THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 9. WHOLE No. 135

FRED'K A. CASTLE, M.D., - EDITOR.

CHAS. RICE, PH.D., ASSOCIATE EDITOR.

PUBLISHED BY

W.L. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

SEPTEMBER, 1885.

SUBSCRIPTION PRICE per year, \$1.00
SINGLE COPIES, 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

THE subject which claims the chief place in the attention of pharmacists this month is the meeting of the American Pharmaceutical Association at Pittsburgh, Pa., on the 8th. The local Secretary, Mr. George A. Kelly, has made elaborate arrangements for the accommodation of the Association and the exhibition of goods, and has obtained a hall for the latter purpose which is sufficiently remote from the meeting-hall to avoid disturbance during the sessions of the association in Lafayette Hall.

The arrangements for reception of goods will be completed by September 1st, and all goods must be addressed to J. W. Harvey & Co., Pittsburgh, Pa., charges prepaid. Exhibitors are requested by Mr. Kelly to prepare a list of their exhibits, directing attention to such articles as they may deem of special interest, and hand this list to the "Committee on Exhibition" which will be appointed during the first session of the Association.

THERE is a matter which may well receive the attention of the American Pharmaceutical Association, during the time which will elapse before the

next revision of the U. S. Pharmacopœia, namely, the need for more definite information as to what drugs and preparations should then be made official. There is no way in which this information can be arrived at so readily as by the co-operation of several pharmacists, in different sections of the country, acting together upon a predetermined plan. The prescription files of as many stores as possible should be carefully analyzed, and the articles prescribed should be checked off by the titles in the pharmacopœia of 1880. In no other way can the actual needs of the medical profession become known, or the Committee of Revision become aware of the relative values of the articles which come to their notice as candidates for retention in, or admission to, the pharmacopœia.

During the revision of 1880, the writer made a limited use of this method for obtaining such information respecting one class of remedies, since in no other way could it well be obtained, and the result of that endeavor showed plainly to him the importance to be attached to such analyses of prescriptions, when carried out over so wide an extent of country as is intended to be served by our pharmacopœia.

It is remarkably true of our indigenous drugs that their use is not always general, but things which are in common use in one section of the country are but rarely, if ever, employed in some other portions of the United States, and without some such definite information as can only be obtained by the method above referred to, any Committee of Revision is liable to err in its judgment as to what shall be made official, and what to omit from its list.

Still another subject which should receive the attention of the Association is the cultivation of drugs, both indigenous and foreign. This has already been the subject of individual investigation, but in order to be effective, it should be undertaken by a committee, the members of which live in widely separated districts, in climates and upon soils of varying character, and the same drugs should be experimented with by all the members.

A work somewhat similar to this has for some time past been conducted by the Department of Agriculture in the study of fodder grasses, and the results already published will offer suggestions as to the methods that prove most serviceable in the case of drugs.

The British Pharmacopœia, 1885.

UP to the time of our going to press, the new British Pharmacopœia had not yet reached us. We, therefore, publish here, for the present, an editorial of the *Chemist and Druggist*, which will serve to give a general idea of the character of the new work.

"We are able to state that the proof-sheets of the new edition of the British Pharmacopœia have passed through their final revision at the hands of the Pharmacopœial Committee of the Medical Council, and are now, we believe, in course of preparation for the press. It is expected that the book will be ready for sale in about a month, and in our next issue we hope to be able to commence a critical review of its contents. We have had an opportunity of glancing through the work in its unfinished state, and it may be interesting to give in advance some particulars of its special features.

"First, we notice that it extends to about a hundred more pages than the edition of 1867. The general plan is the same as that with which we are now familiar, and our impression is that but little interference has been made with the preparations in most

general use. No revolution in weights and measures, such as our metricomania would have desired, has been attempted. These are given in the old familiar form, but in a large number of instances a supplementary column has been added, in which the proportions are expressed in parts and fluid parts. This will often be found very convenient. As an example we may quote *Liquor hydrargyri perchloridi*. This is ordered to be composed of 10 grains of the salt in 1 pint of water. In the supplementary column this is shown as 1 part to 875 fluid parts. Powders are described as of varying degree of fineness, numbers from 2 to 60 being chosen to indicate these siftings. Temperatures are still given in Fahrenheit degrees, but in all cases centigrade degrees are added in brackets. Some changes in nomenclature are observable. Alkaloids are all made to end in *ina*, which will change labels to Quinina sulph., Morphia hydrochlor., etc. Dr. Attfield's chemical nomenclature seems to be generally adopted, as, for example, *magnesi carb.* instead of *magnesia carb.*, calcium, potassium, sodium, etc., following the same style. Opium for preparations is to be standardized to 10 per cent of morphia; extract of nux vomica is to contain 15 per cent of alkaloid, and the tincture 1 grain in the fluid ounce. Cinchona succirubra is chosen for preparations.

"The committee have evidently observed great leniency towards old preparations, and the few omissions will not be greatly mourned. They include *areca*, *dulcamara*, *elm bark*, *digitaline*, *castoreum*, *iodides of cadmium*, *iron*, and *mercury (the green)*, *quinine pills*, *gentian mixture*, *atropine solution*, and a few preparations of the above. Novelties are much more abundant. Among these are *boric*, *hydrobromic*, *lactic*, *chromic*, *meconic*, *oleic*, and *salic* acids, *aloin*, *caffeine* and its *citrate*, *coca leaves*, and the *hydrochlorate of cocaine*, *hydrochlorate of apomorphine* and of *pilocarpine*, *iodoform*, *jaborandi*, *thymol*, *menthol*, *gelsemium*, *cascara sagrada*, and *rhamnus frangula*, *oil of eucalyptus*, *dialyzed iron*, *oleates of mercury and zinc*, *nitroglycerin* in the form of tablets, a hard and a soft paraffin to be used for certain ointments, *salicin*, *santal oil*, *sulphate of morphia*, *hydrochlorate of quinine*, *sulphates of cinchonia* and of *cinchonidine*, *ergotin*, *chrysarobin*, and, of course, preparations of many of the above. The list we have given is by no means exhaustive. A tincture of chloroform and morphia apparently represents *chlorodyne*; this, with 'la-mellæ' of atropine, cocaine, and physostigmine, a fluid extract of *cascara sagrada*, and a few preparations already named, seem to cover the adaptations from private enterprise.

"This very imperfect survey will show that a great amount of labor has been devoted to the work, and we hope and believe that in consequence our new British Pharmacopœia will be found to be at least as advanced in regard to medical and pharmaceutical knowledge as are many of its continental and transatlantic contemporaries. It will be thoroughly satisfactory as regards printing and general style of production, and we understand it will be sold at a price which will only just cover the cost, six shillings being the probable figure."

WITH profound regret we learn, just as we go to press, that our esteemed friend and colleague, MR. HENRY B. PARSONS, of New York, died on Friday, August 21st, at Tucson, Arizona, whither he had moved in the hope of improving his health. We shall endeavor to do justice to his memory in our next issue.

Cadaver Poisons.

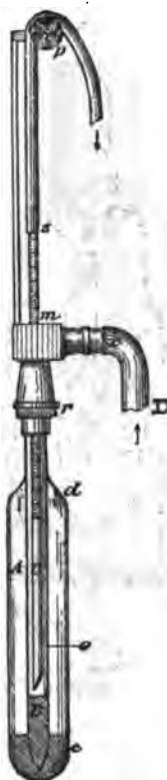
PROF. BRIEGER, following up his communications of a year ago, recently reported to the Physiological Society of Berlin further investigation into the ptomaines. In his former communications the speaker had described five well-characterized bases—neurine, muscarine, neuridine, and two other diamines—extracted from the ptomaines, which were developed in putrefying nitrogenous substances, and in the form of beautiful crystallized salts, and had subjected them to precise chemical and physiological analysis. As the result of this analysis, neurine, muscarine, and a base similar to, but not identical with trimethyldiamine were found to be very violent poisons, while the two others showed themselves to be less poisonous. Seeing that the ptomaines must here be regarded as products of the putrefactive bacteria, Prof. Brieger set himself the task of studying the products of pathogenic bacteria. He proceeded, however, beforehand to investigate the ptomaines which developed under natural putrefaction in the case of human corpses, and found that here quite different bases came to light than those which appeared under artificial putrefaction. Immediately after death lecithin decomposed itself, and large quantities of choline became developed, and, along with this base, neuridine appeared on the third day of putrefaction, increasing in quantity with the progress of putrefaction. From the seventh day after death there came to view an entirely new base, which, with hydrochlorate of platinum, yielded very beautiful crystals, and, both in this connection as also in the form of hydrochlorate of gold and in its conjunction with hydrochloric acid, had been searchingly examined. This base, altogether different both in its quantities and in its composition from the bases hitherto known, was named "cadaverine." It increased in quantity with time, while choline and neuridine diminished. Later on there appeared another new base which was also characterized by its hydrochlorates of platinum and gold, as likewise by its chemical composition, which the speaker called "putrescine" and was able to show in the form of beautiful crystals, both in a pure state and in the hydrochlorates of platinum and gold. Both these new bases, cadaverine as well as putrescine, acted but weakly on the animal organism. The first possessed the well-known smell of coniine, which former observers had already noticed in putrefying bodies. Besides these weakly acting nitrogenous bases, there were found in the later stages of putrefaction two diamines of very powerfully poisonous effect, which, injected even in small doses in animals experimented on, produced death under paralysis. These two were presented in distinct crystals and isolated. A survey of the whole series of isolated ptomaines taken from corrupting nitrogenous substances showed that, contrary to the former assumption, they were all simply compound, that they were all diamines belonging to the series of fats. Their great resemblance to vegetable alkaloids rendered it necessary that in the case of chemical investigations only such alkaloids and bases should be deemed demonstrated to exist in a dead body which had been isolated and had been presented in their characteristic salt-crystals. In the endeavor to study the bases produced by pathogenic bacilli, Prof. Brieger had examined artificial cultures of bacilli, and first the typhoid bacillus of peptone. This led to no positive result. It was the culture of the typhoid bacillus on meat infusion and meat jelly, which first led to the isolation of two new intensely poisonous bases, one of which, being injected

in small quantities into animals, acted similarly to neurine, producing death under a strong flow of saliva, paralysis, and diarrhoea, while the other produced only violent exhausting diarrhoea. The small quantities of these poisons did not yet, however, allow them to be sufficiently characterized chemically. They appeared to be triamines, and should be further investigated.—*Nature*.

A SIMPLE GAS REGULATOR.

E. H. v. BAUMHAUER has constructed a thermo-regulator which is here illustrated.

Into a long test-tube A, a smaller tube B, open at both ends, but drawn to a point at the lower, is fastened either by a rubber stopper, or, better (as shown in the cut), by fusion in the flame. The upper end of this tube is cemented into a fitting which admits gas in the direction of the arrow. A small quantity of mercury is poured into B, portion of which will pass into the outer tube A, where it will, however, not rise as high as in B, owing to the air above it being confined. Through a greased leather washer situated in the body of this fitting, at



Baumhauer's Heat Regulator.

m, passes a still smaller glass-tube C into the tube B. The tube C is obliquely ground off at the bottom, and has a fine hole blown into it at about o. In its upper portion it is graduated, and connected with rubber tubing leading to the burner which it is to supply with gas. The test-tube A is placed into the water or hot-air bath. When the current of gas is admitted through D, it passes down between the walls of the tubes B and C, and enters the obliquely ground end of the latter, ascending from there through it, and passing through the burner. As soon as the heat surrounding the outer tube expands the air confined over the mercury, the latter rises, and gradually closes the orifice of the tube C, shutting off the main supply of gas, all but a small leak, through o, which serves to keep a very small flame alight. The temperature may be regulated by raising the inner tube C, and this may be adjusted very accurately with the aid of the graduation attached to or engraved on the tube.—*Chem. Centralblatt*.

Cosmetics for Removal of Sun-burn and Freckles.

At this time of the year there are few questions which are more frequently addressed to the "family chemist," and fewer still to which he ordinarily gives so unsatisfactory a reply, as—"What shall I do to cure my freckles?"

Knowing as we do how greatly the popularity—i.e., the business prosperity—of the majority of our friends depends upon the votes and interest of their lady customers, we have been at some pains to lay before them such an amount of practical information upon the above subject as will enable them to retain the good-will and material gratitude of their fair interrogators on the one hand, and to put a little extra profit in their own pockets on the other.

It will be generally admitted that upon the subject of our present notes there is no published information of a practical and reliable character, and that medical writers and practitioners either shun the question altogether or approach it in a perfunctory manner, and leave it very much where they found it. For our present purpose the cutaneous discoloration, commonly designated by the term "freckles," may be considered under two heads—the so-called "summer," or temporary variety (*ephelis*), and the permanent kind (*lentigo*). Both are commonly stated to be simply morbid alterations of the skin-pigment, and to be situated solely in the *rete mucosum*, but this is not absolutely true, inasmuch as *ephelis*, properly so called, is generally due to a darkening of the under surface of the epidermis either in small ovoid patches ("summer freckles") or extended over a larger surface ("tan" or "sun-burn"), while with *lentigo* the brownish discolorations are at a greater depth, and remain *in situ* after the covering epidermis has been completely removed. Strong sunshine, or any powerfully actinic light, and radiant heat from any source are apt to produce the first-named, and to enhance the latter form.

SUN-BURN LOTION.

B Acidi Citrici..... 3 ij.
Ferri Sulphatis puri..... gr. xvlij.
Camphoræ..... q.s.
Aq. Flor. Sambuc..... 3 iij.

The sulphate of iron must be in clear green crystals unless the "granulated" form, which is preferable, be available, and in either case the salt should be fresh and free from oxidized portions, or "rustiness;" it should be dissolved in half the elder-flower water (all of which is better if not quite recently distilled, or being quickly raised to the boiling point and cooled out of contact of air before use), the citric acid being also in solution in the other half, and the two fluids mixed, filtered if necessary and bottled immediately, a lump of camphor about the size of a small peppercorn to be added to the contents of each bottle.

HYDROQUINONE WASH FOR THE SKIN.

B Hydroquinone..... gr. xlvij.
Acid. Phosphoric, glac..... gr. xxx.
Glycerini..... 3 ij.
Aqua dest..... 3 vi.
Misce.

These two lotions are stated to give excellent results, especially the latter. They are to be applied to the skin of the face, etc., in the usual way, at least twice in the course of twenty-four hours, after it has been washed and dried carefully. If the skin be of the nature known as "greasy," a preliminary wash with tepid water containing a few drops of sal volatile or liq. ammon. fort. is advisable.

"ALBADERMINE,"

Under this empirical title, a foreign surgeon has devised the following pro-

cess of removing "tan" and the milder variety of "freckles":

SOLUTION "A."

℞ Potass. Iodid.....	3 ij.
Iodid.....	gr. vi.
Glycerini.....	3 iij.
Infus. Rosæ.....	3 iv.

Dissolve the iodide of potassium in a small quantity of the infusion and a drachm of the glycerin; with this fluid moisten the iodine in a glass mortar and rub it down, gradually adding more liquid until complete solution has been obtained; then stir in the remainder of the ingredients, and bottle the mixture.

SOLUTION "B."

℞ Sodii Hyposulph. (Thio-sulph.).....	3 ss.
Aque Rosæ Exot.....	O. i.

Dissolve and filter.

With a small camel's hair pencil or piece of fine sponge apply a little of "Albadermine A" to the tanned or freckled surface, until a slight but tolerably uniform brownish-yellow skin has been produced. At the expiration of fifteen or twenty minutes moisten a piece of cambric, lint, or soft rag with "B." and lay it upon the affected part, removing, squeezing away the liquid, soaking it afresh, and again applying until the iodine stain has disappeared. Repeat the entire process thrice daily, but diminish the frequency of the application if tenderness be produced. In the course of from three or four days to as many weeks the freckles will either have disappeared entirely, or their intensity will be very greatly diminished. "Summer freckles," yield very speedily to this treatment.

ANTI-FRECKLE LOTION.

℞ Hydrarg. Bichlor.....	gr. xij.
Acid. Hydrochlor.....	3 iij.
Fruct. Amygd. Amar.....	3 iss.
Glycerini (Price's).....	3 i.
Tinct. Benzoin.....	3 ij.
Aqua Florum Aurant.....	q. s.

Dissolve the corrosive sublimate in three ounces of the orange-flower water, add the hydrochloric acid, and set aside. Blanch the bitter almonds, and bruise them in a Wedgwood mortar, adding thereto the glycerin and using the pestle vigorously; a smooth paste is thus obtained. Then add gradually about 9 ounces of the orange-flower water, stirring constantly, continuing this operation until a fine, creamy emulsion is the result. Subject this to violent agitation—preferably with the aid of a mechanical egg-whisk—and allow the tincture of benzoin to fall into it the while drop by drop. Then add the mercurial solution, filter, and make up the whole to the measure of one Imperial pint with more orange-flower water.

This preparation is recommended to us by an eminent dermatologist as being invariably efficacious in the treatment of *epheles*, and always greatly ameliorating *lentigo*, even if it does not entirely decolorize the patches in the latter case. A general whitening of the skin is produced by this lotion without any irritation. It is as well, however, not to apply it to any abraded surfaces. It has been found far superior in practice to a preparation—which it somewhat resembles—sold at a high price under the name of *Lait Antiphélique*.

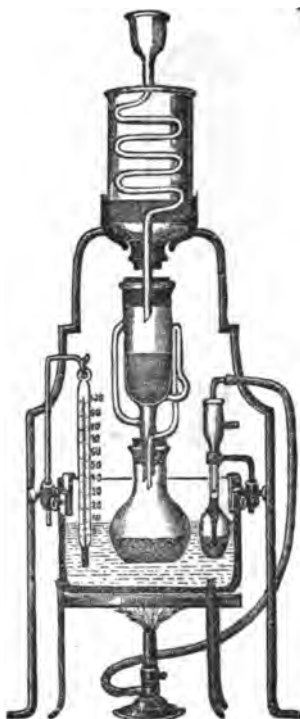
BISMUTH OINTMENT FOR FRECKLES.

Bismuthi Subnit.....	3 ij.
Ung. simpl.....	3 ij.

M. Apply to the skin at night and remove in the morning with a little cold cream previous to washing. (This is from a private American source.)—*British and Colonial Druggist*.

The Action of Ammonia upon Solutions of Potassium Salts.

Most potassium salts are less soluble in water charged with ammonia than in pure water. Some, such as the sulphate, oxalate, ferrocyanide, and phosphates, are partially precipitated if to their saturated solutions there is added a saturated solution of ammonia. Others, such as the chloride, nitrate, and chlorate, are not precipitated if their saturated solutions are saturated with ammonia. If a very strong solution of potassium carbonate is saturated with ammonia, there are formed two strata; the upper layer contains the bulk of the ammonia, whilst the lower contains nearly all the potassium carbonate. Of all the potassium salts the least soluble is the sulphate. Potassium solutions so dilute as not to be precipitated by acid sodium tartrate, nor by platinum tetrachloride (without the addition of alcohol), give an abundant precipitate if they are first saturated with gaseous ammonia, and then mixed with an ammoniacal solution of sodium sulphate.—H. GIRAUD in *Compt. Rend. (and Chem. News)*.



COMPACT FAT EXTRACTION APPARATUS.

PROBABLY the most compact form of fat extraction apparatus, based on the original designs of Soxhlet, is that illustrated here.

An exterior iron frame bears on its top a condenser, to which is attached, below, a Soxhlet extracting tube and wide-necked flask. The latter is made to dip into a water-bath which stands upon an iron tripod. To one upright of the exterior frame is attached a clamp for holding a thermometer in the water-bath, and to another is fastened a gas regulator to maintain a uniform temperature.

The use of the apparatus is plainly intelligible from its construction. It is made and sold by Dr. Herman Rohrbach (J. F. Luhme & Co.), of Berlin, and costs 45 marks.

Baths of Permanganate of Potash.—Hüllman (*Arch. f. Kinderhilde.*) recommends full baths of permanganate of potash, 1 gramme to a bucket of water, as very effective in scrofulous exanthema, in prurigo, eczema, and intertrigo; also in the stage of desquamation of measles and scarlatina, to prevent contagion.—*Chicago Med. Rev.*

Deaths in England and Wales from Poisoning.

THE *Chemist and Druggist* gives a synopsis of the causes of death by poisoning which occurred in England and Wales during 1883, taken from recent official reports, of which we make the following abstracts.

Of 639 deaths, 374 were due to accident or negligence, 264 to suicidal acts, and 1 to murder. 93 of the accidental deaths occurred in children under 5 years of age.

	Accident.	Suicide.
Opium, laudanum, morphia.....	88	33
Soothing syrup, cordial paregoric.....	5	..
Lead.....	79	..
Carbolic acid.....	20	57
Prussic acid, oil of almonds.....	8	22
Vermine-killer.....	2	20
Strychnia, nux vomica.....	1	14
Alcohol.....	24	1
Oxalic acid.....	..	24
Chloral.....	13	3
Hydrochloric acid.....	7	9
Sulphuric acid.....	6	9
Cyanide of potassium.....	..	15
Arsenic.....	6	25
Ammonia.....	9	1
Chlorodyne.....	10	..
Phosphorus.....	1	7
Mercury.....	6	1
Belladonna.....	6	..
Aconite.....	8	2
Nitric acid.....	3	2
Chloroform.....	3	1
Caustic potash.....	2	1
Antimony.....	1	1
Kind not stated.....	29	41

Matches, water hemlock, and benzoline each caused 3 deaths; paraffin, poisonous herbs and vegetable poisons, poisonous fish, liniment, improper food, oil of juniper, medicine (kind not stated), yew, poisonous berries, each caused 2 deaths; iodine, tartaric acid, Woodward's Grippe water, drugs to procure abortion, green paint, diseased meat, Cayenne pepper, syrup of rhubarb, croton oil, nitre balls, copper, hydrate of tin (salmon in tins), and mushroom, caused 1 death each.

For suicide, the following poisons were selected once each:—Chloride of zinc, atropine, bichloride of mercury, bichromate of potassium, lime, and salt of lemon.

Preparation of Pills containing Essential Oils.—Mr. C. Jonas (*Union Pharm.*) considers that for pills containing a large quantity of essential oil tragacanth is not the best excipient. It leaves much of the oil on the pestle, mortar, and pill-machine, and the pills thus made soon become very hard. He prefers carbonate of magnesia and balsam of Peru. For such a prescription as the following, for instance: Essential oil of rue, 30 drops, to make 30 pills—the process would be to put the oil in the mortar, add carbonate of magnesia q. s. to make a half-dry mass, and make up with 8 to 10 drops of balsam of Peru. This mass is perfectly homogeneous and easily divided. The pills remain plastic for a long time. For croton oil and creasote he uses carbonate of magnesia only.

Alteration in the British Patent Medicine Stamp.—The British Government contemplates to add to the revenue stamp required to be attached to packages of proprietary medicines, the words "This stamp implies no Government guarantee." It has been a matter of complaint among druggists and doctors that heretofore a large proportion of the nostrum-taking public have looked upon the revenue stamp as a special form of Governmental approval of the merits of the contents.

TWO NEW FILTERS.

Mr. P. CASAMAJOR describes two new filters which he has lately used with advantage.

One form of filtering apparatus is shown in section. The vertical portion is a tube open at the top. The horizontal portion is a circular disc, provided with a few holes to establish communication between the upper and lower surfaces of the disc. Below the disc, horizontal openings are made to allow the vertical tube to communicate with the space below the disc. The vertical tube may have the same diameter throughout, but the walls of the tube are thicker in the lower portion than in the middle, and in this thicker than in the upper. The tube does not taper uniformly on the outside, but there is a shoulder between each portion and the one above it, the lower shoulder being designed to hold the disc in its place.



The filtering medium used with this apparatus is a circular piece of cloth, the centre of which is placed under the vertical tube. The cloth is folded over the edge of the disc, so that the edges of the cloth will meet above the shoulder between the middle and upper portion of the tube. These edges are fastened above this shoulder by means of a string or a wire. The upper portion of the vertical tube may then be connected with a rubber tube.

To use this apparatus, it may be placed in a vessel containing the liquid to be filtered. The rubber tube attached to the vertical tube may pass over the edge of the tank and be prolonged downwards on the outside below the position of the filter in the liquid. The siphon formed in this way may be started by suction. The liquid to be filtered passes through the cloth and outwards through the rubber tube.

Wood is the most convenient material for making this filter. It has the drawback that it floats, which may be remedied by attaching a weight to the portion shown in the figure.

For certain purposes this portion may be made of metal—iron, lead, tin, etc. Instead of pure lead, an alloy of lead 90 parts, antimony 10 parts, tin 5 parts, will be found to be harder and sufficiently tough.

This filtering apparatus is applicable to manufacturing operations on a small scale rather than to laboratory work.

The second form of filter is one which Mr. Casamajor has had in use for some time. He has named it the *sand poultice*. It is a bag full of sand, through which the liquid to be filtered has to pass. The bag holding the sand is made of two circular pieces of cloth, whose edges are sewn to a strip of cloth about 1½ inches wide. After this bag has been filled with sand, it has the shape of a flat circular box.

When in use, this sand poultice must lie on a perforated surface in a cylinder. The poultice is made of such a size that, when pressed down on the perforated surface, the vertical edge, formed by the strip of cloth, presses tightly against the cylindrical surface. It is to obtain this tight fit that the strip of cloth is used, and that the bag has not been made by sewing together the edges of the two circular pieces of cloth.

When this filter was first used, it was found impossible to dislodge a certain amount of air which inflated the upper covering of the sand poultice. This was afterwards avoided by making a slit in this portion of the cloth

through which the air escaped. A certain portion of dirt is in consequence deposited on the sand instead of on the cloth; but this has not been found practically objectionable.

Under the perforated plate supporting the sand poultice is a space for the collection of filtered liquid, which may very conveniently be let out by a faucet. With the sand may be mixed powdered charcoal, bone black, etc. The sand poultice may be taken out and washed as often as is desirable, and the bag may be refilled when necessary.

During the late period of turbidity in the Brooklyn water supply, he had occasion to use the sand poultice for filtering water for domestic use, and has found it advantageous to have a layer of fine gravel on top of the poultice, to arrest the greatest part of the muddy deposit and prevent it from obstructing the cloth. This gravel was taken out and washed twice a week without disturbing the rest of the filter. After being washed, the gravel was put back on top of the bag. After doing this five times, it was found necessary to take out the poultice itself to wash the cloth covering.—*Jour. Am. Chem. Soc.*

Glycerin Capsules.

In an article recently printed in the *Deutsch. Archiv f. Klin. Med.*, Dr. Fiedler, of Dresden, discusses the treatment of trichinosis, and arrives at the conclusion that *glycerin* is the only remedy which can be used at the present time with some expectation of success. He says:

"Intestinal trichinæ and embryos, when coming in contact with glycerin, shrink, die at once, even if the glycerin has been diluted with 2 or 3 parts of water. The glycerin may be given in considerable doses, about a tablespoonful each hour, or from 5 to 7 avoirdupois ounces per day. But in the usual method of administration we encounter this difficulty, that the glycerin is already diluted with much water in the stomach, and thereby becomes too weak to act on the trichinæ contained in the small intestines. It would, therefore, be highly desirable to find some method by which the glycerin may be made to pass as little diluted as possible into the small intestines. Since the gastric juice is acid, but the secretion of the intestines alkaline, it would be necessary to inclose the glycerin into an envelope which is insoluble in acids, but soluble in alkalies. Such a coating would be furnished, for instance, by the substance called *keratin*, recommended by Dr. Unna. But since glycerin is a liquid, the above substance cannot be used as such directly. To accomplish the desired object, therefore, is a task devolving upon the pharmacist.

Experiments in this direction were made shortly after the above had been published in the *Pharm. Centralhalle* (1885, No. 25), by Julius Mulfinger, of Schellenberg, and the latter published his results in the succeeding number of the same paper, as follows:

Proceeding from the idea that the usual size of pills does not admit the inclosure of a sufficiently large quantity of glycerin, I at once experimented with small wafers, which I coated on one side with a solution containing 4 Gm. of resin, 1 drop of oil of cinnamon, 10 drops of olein, and 16 Gm. of ether. The coated wafers were dipped into warm water to soften them, whereupon 2 Gm. of the following mixture were placed in the centre of each:

Glycerin..... 25 parts
Tragacanth powd..... 1 part

Make into a paste with the aid of heat.

After the wafers had been rolled to-

gether and closed, each one was suspended by a thread, and the ends dipped several times into the resin solution.

The resulting wafers, or morsels, were moderately elastic, and became soft when dipped into warm water, without giving off any glycerin. In external appearance, however, they were not pleasing, being speckled and of a dirty yellow. A better result is obtained in the following manner: Take Limousin wafers and coat them internally and at the edges, according to their size—No. 1, 2, or 3, with 2, 3, or 5 layers of the resin solution, until the coating has become sufficiently thick. From the above glycerin paste form globular pieces of suitable size, and place them carefully in the centre of the wafers. Now coat the edges once more with the resin solution, close them [with similarly treated empty wafers] by gentle pressure, and dry thoroughly.

In this way relatively large quantities of glycerin may be inclosed in an elastic coating protected by resin and olein.

The editor of the paper appends the remark that it remains to be shown whether these wafers do not burst open in water at a temperature of 35°–40° C. (95°–104° F.), and containing 0.1% of hydrochloric acid, which would about correspond to the conditions encountered by the wafer in the stomach. And, on the other hand, it must be proven that they will dissolve in water at the same temperature, containing 0.1 to 0.2% of carbonate of sodium, which may be taken as the condition existing in the small intestines. Otherwise it seems that the proposition to inclose the glycerin in wafers is a practical solution of the difficulty.



CONTRIVANCE FOR CORRECTLY OBSERVING THE HEIGHT OF LIQUIDS IN TUBES.

A. G. MARTIN, of St. Denis, has patented a contrivance for correctly observing the height of liquids in thermometers, burettes, or other tubes. This consists in combining with the tube a white background *b*, upon which a colored line *a* is drawn. By a sort of reflex action, the level of the liquid within the tube becomes thereby much more prominent.—*Dingl. Pol. Journ.*, 254, 76.

The Manufacture of Cinchona Alkaloid in Madras.—Hitherto Madras has been dependent upon Bengal for its supply of cinchona alkaloids; but since the appointment of Mr. Hooper as government quinologist in Madras, it has been decided to carry out the manufacture there. Mr. Hooper has recently visited the Medical Store Depot, and after an inspection of the laboratories, found that the appliances could be adapted to the manufacture of the liquid cinchona on a large scale. The cost, taking the bark at the rate of the recent sales at Madras, and allowing the usual percentage for fuel, labor, etc., was estimated at 1.09r. per fluid pound. This will enable it to be issued at a price of some 30 per cent lower than the febrifuge now obtained from the Government factory in Bengal for use in the hospitals and dispensaries at this Presidency. Mr. Hooper has been instructed to at once manufacture 1,000 lbs. of fluid extract at 40 grs. to the ounce.—*Chem. and Drugg.*

Tincture Deposits.*

Tincture of Hyoscyamus.—Hyoscyamus contains amongst other substances of less importance the alkaloid hyoscyamine, with traces of atropine, which together constitute the active principle; also a volatile oil and chlorophyll.

Hyoscyamine is very soluble in alcohol, proof spirit, ether or chloroform, soluble also in water, and its salts are soluble in water and alcohol; it exists to the extent of from .13 to .27 per cent in the leaf and from .014 to .041 per cent in the stem, according to Thorey. Considering these facts, one need not expect to find the alkaloid in the deposit from a tincture of the drug. It crystallizes in needles, is volatile at a slightly elevated temperature, and the salts are crystalline. Its solutions are precipitated brown by iodine, white by tannin, yellow by chloride of gold, but not at all by chloride of platinum.

Notwithstanding the vast amount that has been written on the subject of chlorophyll, the chemistry of that substance is still very imperfectly known.

It is soluble in ether, chloroform, alcohol, alkalies and acids, but insoluble in water and very slightly soluble in petroleum spirit unless contaminated with oil as is very frequently the case.

When an ethereal solution is subjected to the action of moderately strong hydrochloric acid, the acid liquid becomes blue, while the ethereal layer retains a greenish-yellow substance. On this account it has been thought that chlorophyll is a mixture of two substances, named respectively phyllocyanin and phylloxanthin.

When an alcoholic solution of chlorophyll is added to a solution of alum and the aluminum hydrate precipitated by an alkali, the precipitate carries down a dark-green coloring matter and leaves the solution yellow. This again points to the complex nature of chlorophyll.

The volatile oil of hyoscyamus is but slightly known.

The deposit occurred as a deep green extract which was washed with proof spirit and dried, by which process it lost about half its weight of water and spirit. 1.1030 gramme was burnt for estimation of ash, leaving 0.0645 gramme or 5.85 per cent, which, on examination proved to be almost entirely phosphates of calcium and potassium, with traces of chlorides and sulphates. There was no nitrate or nitrite, as might have been expected from the large amount sometimes found in the B.P. extract.

The deposit was very soluble, almost entirely in ether and chloroform, also in hot alcohol, but not very soluble in cold alcohol, and not at all in water, except the inorganic portion. When warmed with petroleum ether a pale-green solution was obtained, pointing to the presence of a small quantity of oil as well as chlorophyll. The solubilities above given are those of chlorophyll, and the presence of that substance was abundantly shown by the action of hydrochloric acid on the ethereal solution.

For the detection of hyoscyamine, the ethereal solution of 10 grammes of the deposit was shaken with dilute hydrochloric acid and the clear acid solution then tested by Mayer's reagent and chloride of gold, but in neither case was a precipitate produced; the same result was obtained by boiling the deposit in acidulated water and testing the solution as before.

The deposit in tincture of hyoscyamus may therefore be considered unimportant, as it contains nothing which contributes to the activity of the plant.

* Read by Dr. R. A. Cripps before the School of Pharmacy Students' Association.

Ammoniated Tincture of Guaiacum.
—Guaiacum resin consists, according to Hadelich, of the following bodies:—

Guaiaconic acid.....	70.3 per cent
Guaiaretic acid.....	10.5 "
Guaiac β -resin.....	9.8 "
Gum.....	8.7 "
Ash constituents.....	.8 "
Guaiac acid, coloring matter, etc.....	4.9 "

Guaiaconic acid is a light brown amorphous substance, fusing at 100° C. It forms salts with alkalies which are soluble in water. It is insoluble in water, benzol, or bisulphide of carbon, but soluble in alcohol or ether. By the action of oxidizing agents it acquires a blue-green color.

Guaiaretic acid differs from guaiaconic acid in melting at 86° C., is crystallizable, insoluble in ammonia, soluble in benzol, and is not colored blue by oxidation.

Guaiac Beta-Resin is soluble in alcohol or alkalies and is precipitated from these solutions by ether or chloroform as a brown substance.

The other constituents are of little importance.

When guaiacum resin is dissolved in alcohol, about 10 per cent remains insoluble, consisting of gum, woody fibre and other impurities.

In making ammoniated tincture of guaiacum, the ammonia combines with the guaiaconic acid, guaiac β -resin and guaiacetic acid which dissolve, while the guaiaretic acid remains for the most part insoluble, although doubtless some is rendered soluble by the presence of the other resins. I found that in making the tincture eight-ninths of the drug was dissolved, which would agree with the above statement.

The deposit, which was washed with sal volatile and then with rectified spirit, occurred as a gray-brown amorphous powder, adhering to the bottle. It existed in some quantity, there being about 2 drachms from 2 pints of the tincture. It was insoluble in water, or nearly so, but soluble in alkalies with evolution of ammonia on warming, thus showing that the substance contains an ammoniacal salt of one or more resins.

By the action of oxidizing agents it became blue-green, showing the presence of guaiaconic acid; a portion was soluble in ether and the whole was dissolved on adding hydrochloric acid with the ether, pointing to the presence of free acid with the salt.

It was mostly insoluble in benzol, showing that it consists chiefly of guaiaconic acid or its salt, but the benzol layer gave the deep red with sulphuric acid, indicating the presence of guaiaretic acid also.

The substance when treated with ether and HCl yielded on evaporation of the ether a light brown resinous substance melting below 100° C., corroborating the presence of guaiaretic as well as guaiaconic acid.

The alcoholic solution was not precipitated by ether, showing absence of guaiac β -resin.

The deposit therefore contains guaiaconic and guaiaretic acids with a small quantity of an ammoniacal salt of one of these acids.—*Pharm. Journ.*

Menthol has been found by Dr. A. Rosenberg, of Berlin, to cause anaesthesia of mucous surfaces when applied in ethereal or alcoholic solution of 20% or 30% strength. Its effects are not so lasting as those of cocaine, but sufficiently marked to render it valuable as a cheaper substitute.

Compound Iodoform Powder.—Dr. L. Championnière, at a meeting of a French surgical society, recommended the following as an antiseptic dressing: Equal parts of powdered iodoform, cinchona, benzoin, and carbonate of magnesium, the latter having previously been saturated with oil of eucalyptus.

Ginger Ale.

A PRACTICAL correspondent of the *Mineral Water Trade Review* describes his process for making ginger ale, and states that his product seems to give general satisfaction. "The first point is to select a good, sound, unbleached ginger; Jamaica may be preferred, although I found a fair sample of Cochin yield a very good extract. The great aim is, as far as possible, to insure the freshness of the root, as ginger loses a considerable amount of its peculiar odor, although its pungency remains almost unchanged by long keeping. The extract is prepared by pounding 20 ounces of the root into a coarse powder, which should be rendered uniform by passing it through a sieve of forty meshes to the inch; the granules thus obtained are mixed with a sufficient quantity of dilute spirit, composed of equal parts of alcohol at 60°, and distilled water, so as to form a paste, which is placed in a percolating apparatus, and left to macerate for forty-eight hours. Next pour on dilute spirit, so as to obtain 70 oz. of tincture, press out the marc strongly, and finally add sufficient liquid to make 80 oz.

Of the tincture thus prepared, take 7 oz., mix with 6 pints of water and sufficient kaolin (china clay), or thoroughly washed whiting may be used; filter through paper so as to obtain a perfectly bright filtrate, in which dissolve 6 lbs. of sugar without heat. This quantity will be found easily soluble in the above proportion of water.

This forms the first part of the process, which is completed by the addition of 140 drops of tincture of capsicum berries (obtained by macerating 8 oz. of the bruised berries with 25 oz. alcohol at 60°, and 25 oz. distilled water and proceed as in making the essence of ginger; the product should measure 50 oz.); also 180 drops tincture of vanilla (made by macerating 1 oz. vanilla pods, thoroughly bruised in a mortar, with 2 oz. distilled water and 8 oz. alcohol at 60° for eight days; also 6 drops essence of cloves (essential oil of cloves, 1 part; alcohol at 60°, 9 parts), with 30 drops essence of lemon, which quantity will be found perfectly soluble in the syrup, providing that the quality is good; and 2 oz. of citric acid dissolved in 6 oz. of water.

The syrup thus completed may be colored by the addition of burnt sugar as required, and finally filtered with a little paper pulp in the usual way. One ounce and a half is the requisite quantity for each bottle. If it is deemed necessary to give an extra amount of foam, more than exists naturally in the ginger, a most efficient heading may be obtained from the following formula:

Soapwort root (*Saponaria officinalis*) in coarse powder, 4 oz.; animal charcoal, 2 oz.; macerate two days in a mixture of alcohol, 60°, 4 oz.; pure glycerin, 4 oz.; distilled water, 8 oz.; then percolate so as to obtain 16 oz. of finished extract. Two drachms of this will be found sufficient for 1 gallon of syrup.—*Chem. and Drug.*

Walnut Hair-oil.

CRUSH 2 oz. of fresh green walnut shells with $\frac{1}{2}$ oz. of powdered alum to a smooth paste; digest with 10 oz. of benzoated oil in a water-bath until all aqueous vapor has been driven off. Perfume with two drops of otto of roses and 10 drops of oil of neroli.

The walnut shells are best obtained about the end of August or beginning of September. They contain, besides an oil and other constituents, a substance resembling pyrogallic acid, and impart a brown shade to the hair.—*Chem. and Drugg.*

Natural Camphor Oils.

NATURAL camphor oils, namely those of *Dryobalanops aromatica* and *Camphora officinarum*, have long been esteemed as remedial agents in the countries where they are produced, and their introduction in this country is considered by some a mere question of time.

The *Dryobalanops*, or Bornean camphor oil, is a more simple body than laurel camphor oil, consisting chiefly of borneene, an isomer of turpentine oil, with a small quantity of resinous matter. Its specific gravity is close upon 0.900. Johore oil, which I have previously referred to, has a specific gravity of 0.882. Other samples (for which I am indebted to Mr. Jackson, Curator of the Kew Museum) are somewhat higher, one (a) being 0.894, and another (b) 0.909: a is De Vriese's specimen and b Mr. Motley's; both are over thirty years old. Specific gravity is the point in which the Bornean oil differs chiefly from laurel camphor oil, the former being much lighter. The Bornean oil in its natural condition, and even when old, does not contain its peculiar camphor in solution; hence it undergoes no change when exposed to a low temperature, which is another point of difference between it and the laurel camphor oil; so, also, is it different from the fact that it acquires a green color, similar to cajuput oil, when kept in contact with metallic copper for a day or two.*

The Bornean oil does not appear to enter the British drug market, unless (probably) as an adulterant of cajuput oil.

The camphor oil of Formosa was the only lauraceous kind with which we in this country were familiar until lately. Mr. Holmes has favored me with a portion of specimen 451e (Catalogue of the Pharmaceutical Society's Museum) which came from Formosa, per ship *Nestor*. This has a specific gravity of 0.943, and becomes gelatinous, from separation of camphor, when frozen. The color of this oil is golden yellow. If a drop of it be rubbed on the back of the hand, a strong camphor odor is first felt, and when the camphor dissipates, a sassafras odor remains. The oil quickly dries upon the skin and leaves no mark. This oil may be taken as a saturated oleaceous solution of camphor. No satisfactory chemical examination of it has yet been made, the results of earlier chemists, such as Martius and Pelouz, being somewhat conflicting and indefinite.

Japanese camphor oil appears to have been brought to this country only recently. A specimen was presented to the Pharmaceutical Society towards the end of last year. Mr. Braithwaite, in a paper communicated to the London Chemists' Assistants' Association, says of it:—"It is the essential oil obtained as a by-product in preparation of camphor from *Laurus Camphora* (sic). It consists of a saturated solution of camphor in one or more hydrocarbons of the terpene group. . . . The odor is peculiar, resembling a mixture of camphor and sassafras. It is remarkable that the crude oil from Japan smells much more strongly of this oil than that from Formosa."†

The specific gravity of this oil is 0.951, somewhat greater, therefore, than that of the Formosa oil, yet it is a thinner oil. The color is similar. The odor of camphor is feeble; indeed, if one could disassociate from it the idea of camphor, I question if it could be perceived; but the sassafras odor is very powerful. The feeble camphor odor is explained in what follows, and is due to the absence of camphor, for

there is no separation of camphor when the oil is chilled, as we would expect were it, like the Formosa oil, a saturated solution of camphor or crude oil, as Mr. Braithwaite states. The specific gravity of the oil is almost the same as that of crude oil, yet when camphor is removed from crude oil it becomes lighter. In the *Chemical News* for December 12th, 1884, there is an interesting paper by Mr. H. Oishi, which throws some light on the apparent anomaly. This paper contains an account of the method followed in Japan for the sublimation of camphor from the wood, and also that for the separation of camphor from the crude oil, which was devised three years ago. Briefly stated, the method is simply distillation, the distillate being collected and surrounded with cold water. "Camphor separates out as a semi-solid mass, and in order to separate the solid camphor from the oil, the liquid is filtered or squeezed out through a cloth bag." By a second distillation, more camphor is obtained.

Assuming (owing to high specific gravity) the specimen under notice to be crude oil and that chilling without previous distillation does not effect separation of camphor, I roughly distilled a small quantity so as to simulate the Japanese method. Very little came over below 150° C., about a twelfth between that and 170°, a fifth between 175° and 185°, and nearly the same up to 205°. None of these yielded camphor when chilled. So far, distillation had gone on for an hour, and yet there was not a crystal of camphor about the condenser, nor did the residue yield any when chilled. The experiment conclusively proves the absence of camphor.

According to Mr. Oishi, the purified oil has a specific gravity of 0.895, the crude 0.959. My specimen is 0.951, yet it is the purified article. Mr. Oishi's experiments explain this. His results show that the purified oil is composed to the extent of nearly three-fourths of bodies boiling above 170° C., and these are heavier than the more volatile bodies, the heaviest being 0.926. The oil which I have examined gives little or no distillate below 140° C., some between that and 150° C., and nearly one-half of the whole requires a temperature up to 205° to vaporize it, and the residue has a specific gravity of 0.995. The inference is apparent.

So, therefore, the camphor oil of Japan has the camphor removed from it before it is sent to this country, and in this condition it is (according to Mr. Oishi) "a complicated mixture consisting of hydrocarbons of the terpene series, oxyhydrocarbon isomeric with camphor and other oxidized hydrocarbons." The camphor isomer distilled between 180° and 185° C., and constituted from 10 to 12 per cent of the whole. It is a liquid.

I find that the Japanese oil differs from the Formosa oil in its behavior towards nitric acid. If half a drachm of B. P. acid be allowed to act upon a few drops of the Japanese oil for a minute, then diluted with half a drachm of water, a crimson color is imparted to the clear watery solution; but the Formosa oil so treated gives a milky solution, having a scarcely perceptible green shade. Hydrochloric acid acquires a salmon color with both; more marked, however, with Japanese oil.

The camphor-free oil is used in Japan chiefly as an illuminant by the lower classes, also for the preparation of carbon for "Chinese Ink," and Mr. Oishi indicates a use for it as a constituent of varnishes.* It is questionable, however, if it can be called an efficient substitute for the popular

camphorated oil of this country, and I cannot conceive how it is destined to replace it. The crude oil might possibly be a valuable addition to our materia medica, but I am afraid that its sassafras odor would prevent the public taking it up.

From the United States we hear that large quantities of this oil are being received there, and that it is being used for adulterating oil of wintergreen. There should be no difficulty in detecting the adulteration, for oil of wintergreen has a specific gravity of 1.180, which the addition of camphor oil will lower. A rough and ready test (perhaps as good as any) is to gently agitate a few drops of the oil in water; if it be pure it wholly subsides in a few seconds, but if it contains camphor oil several minutes elapse before it subsides, and time is given to notice that the particles of oil assume different forms other than globular.

The action of nitric acid may also be noted; it has little effect upon pure oil, but adulterated oil becomes red.—PETER MACEWAN in *Pharm. Journal*, June 20th.

Adjustable Alarm Thermometers.

MOST of our readers are familiar with thermometers which cause an electric alarm to ring as soon as the rising column of mercury, in which one of the platinum poles of a battery is continuously inserted, closes the current by coming in contact with the other platinum pole. All of these thermometers, however, have heretofore been made so that the platinum wires were fused into the glass of the tube, and the relative position of the two poles or ends remained unalterable.

Ferdinand Knade, of Breslau, has now put on the market an improved electric thermometer, in which one of the poles may be raised or lowered by a rack and pinion arrangement, and the alarm therefore be set for any desired temperature.

Note of ED. A. DRUG.—When the free end or pole of the second platinum wire is *above* the column of mercury, and the current is established by the column rising until it meets the pole, so that the alarm may ring, we have what is called an "open circuit system," and the alarm is then rung by the current passing through an induction coil, and causing the vibration of a hammer against a gong, or some similar contrivance.

When it is, however, desired to ring an alarm for a *low* temperature, the adjustable pole is immersed in the mercury until its extreme end is just opposite the degree at which the alarm is to ring. If the "open circuit system" were used in this case, the alarm would ring continuously (unless the battery gave out) until the mercury had fallen below the pole, and the cessation of ringing would in this case be the alarm. But this would be a noisy and wasteful process. In a case of this kind, the so-called "closed circuit system" is preferable, in which the current, constantly passing, as long as both poles are immersed, is not engaged in the work of ringing an alarm, but in holding up (by galvanomagnetic force) the hammer of a self-vibrating gong, or in keeping arrested the striking or sounding parts of some other kind of alarm. This alarm may itself be an electric "open circuit," fed by the same battery, in which the current is closed by the release of a key or joint.

Resorcin.—The local application of powdered resorcin is spoken of as a remedy for malignant new growths. It may also be used as an ointment with 50% of petrolatum.

* The intensity of the color varies; it was least with Johore oil and greatest with Mr. Motley's. Laurel camphor oil becomes brown or greenish-brown.

† *Chemist and Druggist*, 1885, p. 30.

* When the oil is rubbed on the skin a resinous coating remains on drying. This is rather objectionable than otherwise.

On Arsenites of Iodide or Bromide of Potassium.

WHEN Dr. T. Clemens, of Frankfort o. t. M., published his paper "Das arsenigsaure Bromkali dargestellt und angewandt" (*Deutsche Klinik*, Berl., 1859, xi., 95; 106; 117), the chemical nomenclature used by the author to designate the supposed compound formed was not in accordance with the prevailing views. Nor was it supposed, up to the present time, that an "arsenite of bromide or of iodide of potassium" was likely to turn out to be a definite chemical compound. While it is, however, certain that the term employed by Clemens was not applicable to his preparation, it is now certain that such compounds as those mentioned above actually do exist. Hugo Schiff and R. Sestini have found that, if 20-per-cent solutions of arsenite and iodide of potassium, or of arsenite of potassium and iodine, or more dilute solutions of arsenious acid and iodide of potassium, there results a white powder or crust, which on analysis turns out to be a compound, only contaminated with a little arsenite of potassium (K_2HAsO_3), containing either $4As_2O_3 \cdot 2KI$, or $As_2O_3 \cdot 2KI \cdot H_2O$, that is, either anhydrous or monohydrated arsenite of iodide of potassium. From arsenite of potassium and bromide of potassium or bromine, a similar body is produced, having the composition $4As_2O_3 \cdot 2KBr$. —*Ber. d. Deutsch. Chem. Ges.*, 18, 262.

Emplastrum Impermeabile Rossicum.

(Impermeable Russian Plaster.)

Oxide of Zinc..... 5 parts.
Castor Oil..... 5 "
Collodion..... 90 "

Rub the oxide of zinc with the castor oil to a perfectly smooth paste, then mix it with the collodion.

Pour the mixture, in the same way as photographers do, upon plates of glass, and repeat the process until the layer has acquired the thickness of gold-beater's skin. Next coat the surface of the layer with solution of isinglass, allow to dry and strip the layer from the glass.

This plaster is used (with the isinglass coat next the skin) as a dressing in place of ordinary adhesive plaster.

When preparing larger quantities, the mass is poured into a trough and the plate dipped in it. In this case a uniform coat can be obtained only by immersing the plate each time by a different edge first. —EUGEN DIETRICH, in *Pharm. Centralh.*

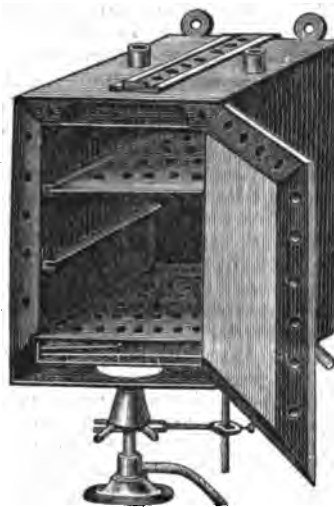
Decomposition of Didymium.

At the meeting of the Vienna Academy of Sciences, on June 18th, Dr. C. A. v. Welsbach sent in a paper on the decomposition of didymium into its elements. This decomposition was effected by means of the double ammonium or sodium nitrates in presence of lanthanum. In spite of the different behavior of the constituent bodies, many hundred fractionated crystallizations were necessary for their separation. The two new elements in solution are distinguished by intense absorption-bands, and share between them the absorption-bands of the peculiar spectrum hitherto ascribed to didymium. The two new elements, when mixed in proper proportions, display the color and spectrum of didymium. The spark-spectra are brilliant and characteristic, and are parts of the spark-spectrum of didymium. The color of the compounds differs. The salts of that element which approaches nearest to lanthanum are of a leek-green. The salts of the other element are rose or amethyst-red. The latter body forms the bulk of didymium. Both colors are almost com-

plementary, but the amethyst-red is by far the more intense, so that the presence of a few per cents of the salts of this element in the compounds of the other suffices to make its green color disappear. The atomic weights of the two new elements are, according to preliminary determinations, very different and vary considerably from the value heretofore ascribed to didymium. For the first element, the author proposes the name praseodym, Pr, and for the second, neodym, Ne. The two elements, as far as it has been observed, yield each only one series of salts derived from the sesquioxide. Praseodym peroxide evolves chlorine on treatment with hydrochloric acid. —*Chemiker Zeitung. Chem. News*, July 31st.

IMPROVED DRYING-OVENS.

In order to produce as uniform a temperature as possible in air-drying ovens, Dr. Hermann Rohrbeck has constructed a new style of oven, in which the air, before coming in contact with the objects to be dried, is previously heated. The heat is applied below in the usual manner, air enters between the lower double walls of the apparatus where it is heated. Then, after passing through the inner space



Rohrbeck's Drying Oven.

of the oven, it enters orifices situated near the top, and circulates all through the double walls of the apparatus, the circulation being extended to the double-walled door by orifices corresponding with those in the box itself. Finally, the heated air and vapors escape from the orifices in the top. These ovens are made and sold, in various sizes, by J. F. Luhme & Co., of Berlin. —*Chem. Centralbl.* No. 20.

Eleven Months' Experience with Toughened Glass Beakers.

In July, 1884, twenty-one beakers were purchased of the Toughened Glass Company, working De la Bastie's patents. One of these was broken by an accident and twenty were taken into use in the laboratory of the Atlas Works. They had the form of thin tumblers furnished with a lip. The bottom is about three times as thick as the sides, and weight for weight they are two and a half times as heavy as the Bohemian beaker of about the same capacity. It was stated on behalf of the makers that they would stand boiling over the flame of a rose burner while supported on a wire gauze, but as one of them burst soon after we began to use them, on pouring hot water into it, the more severe treatment was never tried, and they were relegated to ordinary use. Of late they have been considerably in use in collecting some somewhat tarry distillates, and since then have begun to show evidences of rapid decay. Some slight signs of this

had been noticed early in the career of some of them, but as it principally took the form of slight surface corrosion and dulling of the glass, it was attributed to the well-known action of caustic alkaline solutions. The new action was different, the sides exhibiting a mass of exceedingly minute fissures, so close together and running so completely over the surface of the beaker that it had the appearance of being covered with a tissue of spider's web. The next change consisted in the surface of the glass completely exfoliating, so that on rubbing the finger along the surface, a mass of minute plates could be detached. At length one of the beakers was attacked in this way over about one-third of its surface, and the boundary between the attacked part and that simply fissured was a sharp line passing up both sides and across the bottom. We at first thought that this indicated imperfect annealing or tempering, and, in fact, showed the depth of immersion in the oil-bath. On a little consideration this appeared highly improbable, and we accordingly, though with little hope of solving the mystery, resolved to try whether the two liquids used to clean the glasses when very dirty had anything to do with it. A beaker was half filled with caustic soda solution, another with strong sulphuric acid 1.845, and another with 25 per cent sulphuric acid. At the end of seventy-two hours neither the caustic soda nor the weak sulphuric acid had produced any effect, but the beaker with the strong H_2SO_4 was entirely ruined by an extensive exfoliation which left plates sticking up from the surface from $\frac{1}{4}$ mm. to $\frac{1}{2}$ mm. in height. The beaker in which the 25 per cent acid had been washed and placed on its side to dry on a piece of thick gray filtering paper lying on top of a copper water-oven. In about one hour's time a broad strip up the side in contact with the paper had exfoliated both inside and outside. It was moistened with water, turned over and replaced. In about half an hour another strip of exfoliation had begun. Near the edge of the vessel the scales took the form of hairs 1 to 2 mm. long, and completely curved over at the upper end in the form of the letter C. About ten days back one of the slightly fissured beakers burst spontaneously, and a few days after another followed suit; both containing water at the time. The thick bottom of one of these was a reticulated mass of cracks; when obliquely illuminated each crack shows as a slight depression of the surface. The result of eleven months' use may thus be summarized. Of twenty beakers—

2 burst spontaneously.....	=10 per cent
1 burst on hot water being poured in.....	= 5 "
6 useless from fissures and exfoliation.....	=30 "
6 are in good condition.....	=40 "
8 have been broken by unknown means.....	=15 "

20 100

Take into consideration the loss of confidence caused by the high percentage of spontaneous bursting, it may be said that toughened glass is a complete failure in the laboratory. —R. J. FRIEWELL, in *Pharm. Journ.*

The Treatment of Sick-Headache.

—Dr. W. Gill Wylie (*N. Y. Med. Jour.*), of New York, has produced excellent results with the following method of treatment: So soon as the first pain is felt, the patient is to take a pill or capsule, containing one grain of inspissated ox-gall and one drop of oil of gaultheria, every hour until relief is felt, or until six have been taken. Dr. Wylie states that sick-headache as such is almost invariably cut short by this plan, although some pain of a neuralgic character remains in a few cases.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,548.—*Illicium parviflorum*.

We have recently had an inquiry from a friend who has had occasion to search after a specimen, living or dried, of *Illicium parviflorum* Mich., which is reported to occur in the southern districts of Georgia and Eastern Florida (see Chapman's or Darby's "Flora of the Southern U. S."). Any of our readers having access to a specimen of this plant, or knowing of a locality where it may be found growing, would confer a great favor by communicating with us.

No. 1,549.—The Bitter Taste of Acid Quinine Mixtures (R.).

One of our correspondents says: "I have the following to prepare frequently, and the physician constantly asks whether I cannot disguise the bitter taste of the mixture:

Quininae Sulph. 3 i.
Acid. Sulph. Arom.,
Syr. Ipecac. aa 3 ij.
Tinct. Capsici. 3 iv.
Syrupi. q. s. ad 3 viij.

In general, it may be at once stated, that any mixture containing a quinine salt in solution has a very bitter taste, which is developed instantly as soon as the solution comes in contact with the tongue. The more soluble a quinine salt is, the more quickly is the bitterness perceived by the taste. Any attempt to disguise this bitterness only results in badly overloaded nauseous mixtures, often much more disagreeable to take than the unmanipulated quinine solution would have been by itself alone.

The most efficient way to administer quinine, in mixtures, without bitterness, is to merely incorporate the quinine salt (sulphate of quinine, for instance) with the mixture mechanically, or, still more effectually, to add, besides, some sweet aromatic vehicle, such as the *Elixir Taraxaci Compositum* of the N. Y. & B. Formulary. Various other methods are available, but all of them are based on the above principles.

No. 1,550.—*Gutta Percha* (Washington).

One of the latest papers giving an account of the gutta-producing trees of the Malay Archipelago, which contains also the information you are in search of, is contained in the Journal of the Straits Branch of the Royal Asiatic Society, Singapore, 1884, 207-221.

No. 1,551.—Microbotany (L. and others).

As an addition to our answer to query 1,547 in our last number, we would state that the German work by Behrens there mentioned has been translated into English by Rev. A. B. Hervey, assisted by R. H. Ward, under the title: "The Microscope in Botany." You may obtain it from J. H. Vail & Co., 21 Astor Place, New York.

No. 1,552.—Iodoform and Naphthalin Gauze (Dr. F.).

When iodoform is dissolved in alcohol or ether, or in a mixture of the two liquids, and gauze is saturated with

the liquid, the iodoform will, upon evaporation of the solvents, crystallize on the fabric, sometimes in quite large crystals, which make the gauze have a sandy feel. Besides, in this condition, it is very apt to fall off the fibre; in fact, there is nothing to hold it. The addition of a little glycerin to the solvents prevents the gauze from drying up too much, and keeps it soft and slightly damp when the volatile solvents are evaporated, and there is much less liability for the iodoform to crystallize or to fall off the fibres. The latter may be still better prevented by adding to the solution a very small quantity of some resinous tincture, which will leave a most minute film of resin on the outside of the fibre, to which the fine particles of iodoform firmly adhere. Tincture of Tolu, benzoin, myrrh, or storax may be used for this purpose.

The resulting gauze possesses the penetrating odor of iodoform, which is so disagreeable and repulsive to many persons. Various substances have been recommended for overcoming this odor, and among these certain essential oils are probably the most efficient and suitable. Oil of peppermint has been specially lauded in this direction, and, indeed, it does cover the odor quite well for a time, but its own odor is not pleasant to everybody. Oil of bergamot is, on the whole, probably the best. But even this cannot overcome the difficulty altogether.

As we have pointed out a long time ago, naphthalin, when brought in intimate contact with oil of bergamot, acquires an odor which is quite pleasant, and so specific that no one would be able, by the mere odor, to even guess the two substances brought together.

Now if this aromatized naphthalin is triturated with iodoform, a mixture results which has acquired a new odor, closely approaching that of the aromatized naphthalin, but at the same time reminding one of iodoform, without, however, producing the disagreeable impression which the latter alone does.

The practical application of these facts will be shown further on.

Medicated gauze, containing such agents as iodoform, salicylic acid, naphthalin, etc., should be freely absorbent. That is, all greasy matter, both that adhering to the outside of the fibres, and that still contained in the interior of the fibre tubes (in the case of cotton, more particularly) must be removed, which is best done by boiling the fabric repeatedly with caustic soda, and thorough subsequent washing. It is also customary to bleach the fabric in a weak solution of chloride of lime. When perfectly free from grease, bleached, and completely deprived of all soluble matters by washing, it forms an admirable absorbent.

When it is now desired to prepare any medicated gauze which is to contain, in its dry or apparently dry condition, a definite percentage of some antiseptic, a certain weighed quantity of absorbent gauze may be soaked in a solution containing a known quantity of the antiseptic. The fabric may then be removed, and just enough of the solution pressed out so as to leave in it an amount equivalent to the percentage of the antiseptic required to be retained by the gauze. This mode of procedure is not always convenient and is usually attended with loss, since the solvents used are mostly volatile.

The best plan, particularly for working on a small scale, is to take or to make only as much solution as will contain the exact amount of the antiseptic to be contained by a definite weight of the gauze. The antiseptic solution is then placed in a suitable vessel, and the weighed gauze thoroughly impregnated with the whole of the solution, so as to be uniformly

distributed. If there was liquid enough to cover the gauze when pressed together, the product will be uniform and unimpeachable. In this case, it does not make any difference if a little of the solvent evaporates during the operation, as the whole solution is used up.

Having premised these remarks, we will give a formula for iodoform-naphthalin gauze, which will be found to work satisfactorily:

Iodoform-Naphthalin Gauze.

Iodoform. 2 drachms.
Naphthalin.2 "
Tinct. Benzoin. 2 fl. dr.
Oil Bergamot. "
Ether. 3 fl. oz.
Alcohol. 3 "
Glycerin. "
Absorbent gauze 1 yard.

Dissolve the iodoform and naphthalin in the alcohol and ether previously mixed, and contained in a bottle. Then add the tincture of benzoin, the oil of bergamot, and lastly the glycerin. Fold the absorbent gauze into a small package, place this into a deep mortar or other suitable vessel and pour the solution previously made on top. Press the gauze, until it appears immersed in the liquid, and leave it in the latter for a short time, covering the vessel to prevent too rapid evaporation. Then release the pressure so that the gauze will uniformly soak up the whole of the liquid, remove it, and dry it by stretching it out horizontally.

When all the odor of ether and alcohol has disappeared, put it away in wide mouthed glass- or porcelain-jars with tight covers.

In this state it is a very soft, slightly damp and evenly tinted fabric, of a quite pleasant odor, and containing 25% each of naphthalin and iodoform.

In the same manner it may be made of the strength of 50 per cent.

No. 1,553.—Mosquito and Gnat Stings or Bites (O. A. and T. C. E.).

The most effective remedy for mosquito bites is water of ammonia. But it must be applied immediately. When you go out on a botanizing tour, we recommend you to take a bottle of ammonia with you. You will find it very serviceable.

We have heard favorable reports of a strong infusion of quassia, with which the exposed portion of the body (hands, face, and neck) are to be coated before sallying forth. But we have no experience that way ourselves, and rather think it will be found an unpleasant application to one who is accustomed to bodily cleanliness. Besides, we think that perspiration will soon transfer the "protective coating" elsewhere. Highly odorous oils or other substances have also been recommended, but whoever uses them will find that he is condemned to solitude, if he wishes to avoid disagreeable remarks or criticisms from other persons.

We know of no reliable "drugs" to keep mosquitoes or gnats away from houses.

No. 1,554.—Oils of Lobelia and Stillingia (Subscriber).

The oil of lobelia is not obtained by steeping the herb in olive oil, as you suppose, but is extracted from lobelia seeds by bruising between hot rollers and pressing, while hot, in a strong cloth between iron plates (see King's American Dispensary, under Lobelia Inflata). Its consistence is nearly that of linseed oil, and it possesses drying qualities superior to most or all other oils. It has all the medicinal properties of the seed.

The so-called Oil of Stillingia (see King, under Stillingia) is, more properly speaking, an alcoholic fluid extract, being composed of about forty per cent of oil, with the remainder

consisting of extractive, resin, etc. It is prepared by making a saturated tincture from the recent root of stillingia and alcohol of 95%, and then distilling off the alcohol. The residue is the preparation sold and used as oil of stillingia. A similar preparation is made with ether; it is of greater consistence and probably contains more fixed oil.

The above oil or fluid extract of stillingia is of a dark brownish-red color, of a strong, peculiar, not unpleasant odor, and of a faint taste at first, but in a short time followed by exceeding pungency and acidity, very persistent in its character, which is especially felt in the throat and fauces, being accompanied with a very unpleasant sensation in the stomach if swallowed (King).

No. 1,555.—Chlorodyne (T.).

We are asked this question: "Can you or any of your readers inform me if *chlorodyne* can be prepared by the original formula without a precipitate being formed. The ingredients are: muriate of morphia, tincture of cannabis indica, perchloric acid, chloroform, oil of peppermint, tincture of capsicum, treacle, etc., etc. I take it that the cannabis indica is in the way of a clear product."

We have to say that there has never been an "original" formula of chlorodyne published. When it first came out, it was stated by Dr. J. Collis Browne (who gave it the name) to be a combination of perchloric acid with a new alkaloid, but this was shown to be untrue.

Dr. Ogden published a pretended analysis of the compound as follows:

Chloroform.....	6 drch.
Chloric Ether.....	1 drch.
Tinct. Capsicum.....	¼ drch.
Oil Peppermint.....	2 drops.
Hydrocyanic Acid (Scheele's).....	12 drops.
Perchloric Acid.....	20 drops.
Hydrochlorate Mor- phine.....	8 grains.
Tinct. Indian Hemp.....	1 drch.
Treacle.....	1 drch.

but there is good reason to doubt the correctness of the analysis or even the very assertion that it was "analyzed."

What the true composition of the original chlorodyne was is not known. It is quite probable, as has been asserted, that gradual changes have been made both in the ingredients used, and in the mode of preparation, even of the genuine. More than thirty different formulæ have been published from time to time, some having been furnished by persons who pretended to be in the secret, others the result of chemical analysis, but they disagree so much among themselves that no safe conclusion can be drawn.

Considering the nature of the substances reported as constituents, it must be evident that a tincture of cannabis indica, which is so rich in resin, is incompatible with the treacle, there being not enough alcohol introduced at the same time to keep the resin in solution.

We will not at present suggest a new formula for chlorodyne which would only make matters worse. But we expect that some practical steps will shortly be taken to bring about uniformity in this as well as in many other popular and unofficial preparations. We shall probably be in a position to say more on this subject in our next issue, after the meeting of the American Pharmaceutical Association at Pittsburgh.

No. 1,556.—Sulphurous Acid (Member).

This subscriber writes: "Please publish a formula for a 'sulphur solution' which will produce sulphurous acid in combustion."

In reply, we would say that we

know of only one liquid which abundantly dissolves sulphur, and this is disulphide of carbon. It is true that if such a solution were set fire to, the dissolved sulphur would burn to sulphurous acid. But why should this trouble be undertaken? The liquid itself, being composed of only the two elements, carbon and sulphur (CS₂), is combustible, and when it burns is oxidized into carbonic acid gas, CO₂, and sulphurous acid gas, SO₂. As it is exceedingly inflammable, it cannot be burned in ordinary lamps like alcohol or petroleum. Ckiani-Bey has, however, constructed a lamp which is reported to be suitable for this purpose. We have given an illustration and description of it in our last April number, page 68.

Of course, there are other methods of producing sulphurous acid gas, but none which uses a liquid as a starting-point—at least none that is at all economical. There are other liquid compounds of sulphur, such as xanthic acid, etc., which on combustion give off sulphurous acid gas; but they have no advantage over the bisulphide of carbon.

No. 1,557.—Wafers (E. A.).

We have the address of only one German factory of wafers at present. This is: Johann Schmidt, Oblaten Fabrikant, Nuremberg, Bavaria. You may obtain them there of almost any size and shape. Just now we do not know any American firm that is engaged in their manufacture. We should be glad to receive information on this point from some of our readers.

No. 1,558.—Thalline (M. E. J.).

You will find most of the information wanted on page 146 of our last number, and on page 14 of our January number. In addition, we can state that the substance is manufactured by the Badische Anilin and Soda Fabrik, of Mannheim, in their branch factory at Stuttgart. It is offered in form of two salts, the tartrate and the sulphate, both of which are soluble in water or in wine.

No. 1,559.—Prevention of Mercurial Poisoning in Mirror Factories (S. S.).

The protection of the workmen in factories where mercury has to be much handled is an important sanitary matter. The principal precautions which have been found to be effective are the following:

1. Thorough ventilation. This is possible only in larger works specially built for the purpose.
2. Keeping troughs of mercury covered when not in use, and storing all coated mirrors in separate rooms, well ventilated, and kept at as low a temperature as possible.
3. Care in handling vessels, rags, etc., which have come in contact with mercury.
4. Wearing of suitable clothing, to which particles of mercury are not apt to adhere, or which it cannot penetrate. Change of clothing before leaving the factory.
5. Male laborers should wear short hair and beard, and both males and females should protect their head with a light cap of paper or other material.
6. Frequent washing of face, hands, nose, mouth, and ears. Also frequent bathing.
7. Scrupulous cleanliness in the factory rooms.
8. Sprinkling the floor with diluted water of ammonia. While this is not known to have any chemical effect, yet it has been amply demonstrated that it is the best agent ever recommended or used to prevent mercurial poisoning. According to Claude, not a single case of mercurialism has occurred in the factory at Chanay since it was introduced. It is best used once a day, immediately after working hours, by distributing the liquid in a spray through the different rooms.

No. 1,560.—Osgood's Cholagogue (M. J.).

According to Stearns' *New Idea*, this is composed of the following:

Sulph. Quinine.....	2 drch.
Fl. Ext. Leptandra.....	2 "
"Saturated" Tinct. Stillingia.....	4 oz.
Fl. Ext. Podophyllum.....	8 drch.
Oil of Sassafras.....	10 drops
Oil of Wintergreen.....	10 "
New Orleans Molasses, enough to make.....	8 oz.

Dose: 1 to 2 teaspoonfuls.

[There being no definite strength to such a preparation as a "saturated tincture," we suppose the fluid extract is meant.]

No. 1,561.—Solidified Glycerite of Alum (B.).

We are asked how the glycerite of alum, described under Query 1,500 in our last June number, can be solidified or made into an ointment for being rubbed on the skin.

We think it may be converted into an ointment, or rather paste, by heating it with starch in the same manner as glycerite of starch is made. We have not tried it, but would advise our correspondent to make an experiment.

How it may be solidified is another matter. Certainly it can be done only by incorporating with it some inert substance. We would suggest alumina, which seems the least foreign to its composition.

No. 1,562.—Wine of Coca (Sh.).

The letter of this correspondent asks for a formula for "wine of cocoa," which we suppose to be a *lapsus penæ* for "wine of coca," as we never heard of such a preparation of cocoa before.

Wine of Coca might be made by the following formula which is given by Fenner:

Coca Leaves, in coarse powder.....	2½ oz.
Sherry Wine.....	12 fl. "
Elixir.....	6 fl. "

Percolate the coca leaves with the wine and elixir previously mixed.

There is no standard formula for it.

No. 1,563.—Separating Wood Alcohol from Ethylic Alcohol (S.).

Though processes are known by which the proportions of these two alcohols, when mixed together, may be determined with tolerable accuracy, yet the process employed for either alcohol involves more or less of a loss of the other. The total and absolute separation of the two has probably never been accomplished. It is, however, possible to separate from the mixture, by fractional distillation, a portion which will be almost entirely free from wood-alcohol. On the methods of determination (and incidentally, also, on separation) consult Allen's *Organic Analysis*, 2d ed., vol. i. We expect to have occasion to return to this subject again shortly.

No. 1,564.—Sandford's Catarrh Cure (see February number, p. 39).

We were favored shortly after the appearance of the February number with a communication on this subject by Mr. D. S. Sager, of Brantford, Ont., and had about the same time received the promise of a similar communication from another source. Nothing, however, has yet reached us from the latter. We will therefore state that, according to Mr. Sager, the nostrum in question, if made at the present time as it was about three years ago (and he thinks this is the case), consists of a *distilled extract of witch-hazel and glycerin*. A mixture of these produces the exact counterpart of the "cure." The precise proportions were not determined.

No. 1,565.—Warburg's Tincture (O. M. H.).

The original formula of this prepara-

tion will be found in New REM. 1878, p. 248. It contains so many ingredients—most of them entering into the composition of one of its constituents, viz. Confectio Damocratis—and some of them antiquated and out of date, that shorter formulæ are now generally used, the omissions being commonly acknowledged as immaterial. The chief object is to administer quinine in combination with carminatives. Among the abbreviated formulæ now generally followed are the following:

1. Elixir of Long Life.... 10 fl. oz.
Spirit of Camphor.... 1 " "
Alcohol..... 5 " "
Sulphate of Quinine... 160 grains.

Dissolve the sulphate of quinine in the alcohol, and add the other ingredients.

The Elixir of Long Life (*Elixir Vita Longæ*) is made thus:

- | | |
|---------------------------------|-----------|
| Tincture of Aloes and Myrrh.... | 8 fl. oz. |
| " of Rhubarb..... | 2 " " |
| " of Saffron..... | 1 " " |
| " of Gentian, Compound. | 1 " " |
| Syrup..... | 2 " " |
| Alcohol, enough to make..... | 16 " " |

2. Another formula was published in our last January number, page 17, and need not be repeated at this time.

No. 1,566.—Ambergris (Subc.).

The average quantity of ambergris added to extract of musk for the purpose of assisting in retaining the odor is an amount equal to that of the musk contained in the extract. The addition of a little concentrated tincture of benzoin helps to hold the odor still more persistently.

No. 1,567.—Varnishing Nickel-Plated Articles (J. E. L.).

We are told that the following will probably answer your purpose:

- | | |
|--------------------|---------|
| Sandarac..... | 4 oz. |
| Mastic..... | 1 " " |
| Canada Balsam..... | 2 " " |
| Alcohol..... | 1 pint. |

The toughness and flexibility of this varnish may be varied by diminishing or increasing the proportion of Canada Balsam. The more there is added the softer the varnish becomes.

We have no experience, ourselves, in varnishing such ware. Will you please let us know the results?

No. 1,568.—Compound Syrup of Hypophosphites (J. A. W.).

This correspondent asks for the formula of a clear and white Syr. Hypophosphitum Comp.

Whether our correspondent means the officinal Syrupus Hypophosphitum (which is also a compound syrup), or that containing iron in addition to the other constituents, we do not know. Before the introduction of these two syrups into the pharmacopœia, various formulæ were followed. It is also possible that the writer of the query refers to the Syr. Hypophosphitum Comp. of the New York and Brooklyn Formulary.

How to get any of these syrups clear is merely a question of filtration. How to get them white or entirely colorless is another matter altogether. According to our observation, the aqueous solutions of the mixed commercial hypophosphites, even under the most favorable circumstances, are never absolutely colorless, but have a faint tint, due no doubt to traces of foreign matters.

This tint is sometimes not at all noticeable, when observing small volumes of the solution or syrup, but it becomes more apparent in large volumes. At times, again, some of these salts yield decidedly tinted solutions.

Before we can reply to the query of our correspondent intelligently, it is necessary that we know the formula used by him.

In his letter he mentions a certain manufacturer's syrup as a pattern of clearness and whiteness which he desires to reach. While we have no knowledge of the means adopted by this maker to attain this result, we take this opportunity to state—merely as a matter of curiosity, and not as an example to be imitated—that certain manufacturers of artificial liquors or "liqueurs," and also of other "liquids," sometimes remove a faint yellowish or yellowish-green tint by the cautious addition of a harmless blue coloring matter, chiefly indigo solution. This must be used very cautiously and in a dilute state. As soon as the faint yellowish tint has been removed as much as possible, without, however, imparting to the liquid more than a faint trace of bluish, a very small quantity of a very dilute red color (fuchsin made without arsenic, or eosin, or tincture of santal, etc.) is added. In some cases, and with careful management, the liquid may thus be rendered perfectly colorless.

We would again state that this mode of decolorizing should not be used in medicinal liquids. But it may be useful to apply it sometimes in other cases.

No. 1,569.—Bottling, Washing, Corking Machines, etc., etc. (F.).

There are several firms in New York City where you will be able to obtain all needed information about the various kinds of bottling, etc., machines, their capacity, price, etc. The principal ones are Budde & Westermann, 50 Vesey street, and Wittemann Brothers, 192 Fulton street.

The same correspondent asks whether there is a publication giving information about handling bottles, washing, filling, labelling, etc., in quantities such as a large establishment would use. In reply we have to say that we know of no book on the subject.

No. 1,570.—Rotary Pill Machines (B.).

We do not know of any American manufacturer of rotary pill machines for working on a large scale. If there were any demand for these, there is no doubt but some machinist would quickly supply it. In Germany, the firm of Schlag & Behrend, 70 Alexanderstrasse, Berlin, manufacture such machines. Also O. Ronninger, of Leipzig (see New REM., 1879, 62).

No. 1,571.—Brahmo Yan. (J. E.).

You can take our word for it that "Brahmo Yan, the great Hindu remedy for deafness," is a humbug. The title chosen by the "inventor" is in itself sufficient to brand the article as an imposition, in the opinion of anyone who is familiar with Hindu literature and languages. Moreover, Dr. A. B. Lyons some time ago reported in the *Drugg. Circular* that one of the powders of which the "remedy" is composed is ordinary common salt colored with some organic matter, perhaps powdered golden seal (as he found berberine). The other powder also consists almost entirely of common salt and a small quantity of a vegetable extract powerfully promoting mucous secretion resembling jaborandi (possibly, as the editor of *New Idea* remarks, an extract of pellitory *Anacyclus Pyrethrum*).

No. 1,572.—Syrup of Tolu (U.).

Some time ago, Rother proposed a new method of preparing this syrup which we published in our February number, p. 35, where the figure 6, however, near the end should read 16. He directs to prepare first a glycerite of Tolu thus:

Gently warm one part of balsam with two parts of solution of potassa and eight parts of water until dissolved, then add twelve parts of gly-

cerin, and concentrate the whole to sixteen parts.

A clear syrup of Tolu is prepared by mixing

- | | |
|------------------------|-----------|
| Glycerite of Tolu..... | 1 part. |
| Syrup..... | 15 parts. |

Your objection that this does not appear to be of the same strength as the U. S. Ph. preparation, which directs 4 parts in 100, is not valid. A large portion of the balsam in the U. S. Ph. formula remains undissolved. There is undoubtedly more Tolu in solution when following Rother's formula.

No. 1,573.—Mistura Gentianæ Alkalina (M. K. & H.).

The formula for this mixture, in use in the Consumption Hospital at Brompton, and also at several other hospitals of London, is as follows:

- | | |
|---------------------------|---------|
| R Sodii bicarbonatis..... | gr. 15. |
| Acidi Hydrocyan. dil..... | ℥ 8. |
| Infus. Gentian Comp..... | ℥ 1. |

No. 1,574.—Action of Ammonia on Metals (F.).

Ammonia does not act on any heavy metal, unless air has access to it at the same time. A bright piece of iron, for instance, may be kept untarnished, even in strong water of ammonia, if totally immersed. But if any portion of it, no matter how minute, projects over the liquid, a most rapid process of oxidation by the air is induced.

Tanks for storing water of ammonia, if the latter is to remain colorless, may be constructed of wood and carefully lined with marble, which must be closely fitted and cemented together. We are also informed that several large firms in Europe use large vats lined with paraffin. Possibly this latter plan may answer your purpose. But the paraffin coat must be perfect, otherwise the liquid will acquire coloring matter from the wood. The coating may be applied as follows: Rotate a perfectly dry barrel in front of a bright fire—for instance, in front of open furnace doors, in all directions, until it gets quite hot. Then melt about 4 pounds of paraffin for a 40 gallon cask, pour the melted mass into the barrel, bung it up, and keep rotating it about in all directions so that every portion of the interior may be coated. Gradually remove it from the heat, rotating constantly, until the paraffin sets.

No. 1,575.—Oil of Pennyroyal (H. B.).

European pennyroyal is a different plant from the American. The former is *Mentha Pulegium* L.; the latter *Hedeoma pulegioides* Pers.—*Mentha Pulegium* is cultivated at Mitcham, England, but the herb is usually sold dry, and but seldom distilled for its oil. Most of the commercial oil of pennyroyal in Europe comes from France or Germany. It is usually quoted in European price-lists as *Oleum Pulegii*. "English Oil of Pennyroyal" is identical with this, except perhaps that it is understood to be distilled in England. But there would scarcely be any difference between the English and continental oils. The European oil is never imported here, except perhaps as a curiosity. The American oil (from *Hedeoma*) is produced in various parts of the U. S., and is the only oil sold here. A small quantity only is annually sold as such, most of what is produced being used as an adulterant of oil of peppermint, when the latter is dear.

Lactate of Quinine is strongly advised by Dr. Vigier for hypodermic use in preference to other cinchona salts.

CORRESPONDENCE.

Excipient for Quinine Pills.

I NOTICE the article in your July number headed "Quinine Pills." I have made many hundred pills with the addition of tartaric acid, and with excellent success. Many use too much excipient on the start.

By using a *small* quantity, and working it *thoroughly* through the mass, it *gradually* softens, and a very little excess will (when the mass is completed) render it too soft to roll. With care in the direction mentioned, and a little observation, any one can make a most satisfactory mass with it. Quinine pills made with acid have not in my experience given good results in coating with sugar or gelatin.

Respectfully, E. R. SMITH.
IPSWICH, MASS.

Sea Foam.

I NOTICE in July number of AM. DRUGGIST, a query asking for formulæ for making Sea Foam. The following is what I prepare for our barbers and find it very good:

R Sal. tartar. 3 iss.
Tr. canthari-
des 3 ij.
Water am-
monia 3 ss.
Bay rum,
Alcohol,
Water 55 Oss.
Misce.

Yours,
J. I. P.
EDINBURG, PA.

ITEMS.

Dr. Warburg, who a number of years ago gave to Inspector-General W. C. Maclean, for publication, the formula of the well-known tincture named after him, is now 81 years of age, and is in indigent circumstances. Dr. Maclean appeals to physicians, and especially to druggists who have profited by the publication of the formula, for pecuniary donations for Dr. Warburg's relief. Rev. Fred'k Chalmers, B.D., Nonington Vicarage, Wingham, Kent, England, is mentioned as one of those who will receive contributions.

Professor Hermann von Fehling, born 1812 at Lübeck, died on July 2d at Stuttgart, Württemberg. He was originally educated as a pharmacist, afterwards studied natural sciences, and finally made a specialty of chemistry, first studying under Liebig at Giessen, and afterwards under Dumas in Paris. In 1839, he was appointed professor of chemistry and director of the chemical laboratory at the Polytechnikum of Stuttgart, which position he held during forty-six years, up to the time of his death. His name is a household word in the chemical world. The latest and most important work he was engaged in, and which he has unfortunately not been permitted to complete, is the great *Handwörterbuch der reinen Chemie*, the fourth volume of which, reaching nearly to the letter O, is almost completed.



Prof. Xavier Landerer, of Athens, born at Munich in 1809, died at Athens



"PUTTING HIM THROUGH HIS PACES."

MRS. MULVANEY (the laundress). "Indade, ma'am, an' it's miserable I am. I'm but jist on me feet wid the pain in me back, and Jimmy he's as bad off; he has a cough on um that sounds tolke an' empty bar'! Cough fer the lady, Jimmy!"—*Bazar*.

on July 19th, 1884. His biography will be found in a preceding volume, *NEW REM.*, 1879, p. 318.

Mercurial Ointment, according to Yvon, is more easily prepared with green soap instead of grease; it is equally efficacious and can be cleaned off with greater facility. Care must be used to employ a neutral soap.

Transparent Cement for Porcelain.—Non-vulcanized india-rubber, 100 parts, dissolved in 85 parts of chloroform and 20 parts of mastic added to the solution.—*Journ. de Pharm. d'Alsace et Lorraine*.

Arsenic has been found in sulphate of sodium to the extent of eight grains to the pound. Impure sulphuric acid is the probable source.

Professor Redwood, since 1842 actively engaged as teacher of practical pharmacy, and professor of pharmacy and chemistry at the school of the Pharmaceutical Society, has been retired as Professor Emeritus of Chemistry and Pharmacy. His successor is one of his former pupils, Mr. Wyndham R. Dunstan.

To distinguish young from old ergot, Koster recommends to digest thirty grains of it in two drachms of ether, and to shake it repeatedly. If the ergot be of a recent date, the ether will remain almost colorless, while old ergot causes a distinctly yellowish coloration.—*Arch. de Pharmacie*, xxiii., 1885, No. 31.

Preservation of Succulent Plants.

In the article printed in our last number, page 146, an error crept in which ought to be corrected. The preservative agent to be used is not salicylic, but *sulphurous* acid, and is prepared by saturating a mixture of 4 parts of water and 1 part of alcohol with sulphurous acid gas.

Menthol Plasters.—Mr. Mayet, of Paris, gives the following formula for a substitute for menthol cones. They are to be applied for a few moments at a time to the seat of neuralgic pain:

Menthol,
Chloral hydrate, 55 50 cgm.
Spermaceti 2 grammes
Oil of Cacao 1 gramme

Opionin is the name given by Hesse to a new substance, which he has repeatedly found in Smyrna opium, but only in a very small quantity. If the solution, which is obtained when milk of lime acts upon opium at the ordinary temperature, is faintly super-saturated with acetic acid, and then evaporated to about the weight of the original opium—care being taken that it always maintains an acid reaction—a brown flocculent mass separates, which is a mixture of opionin, gypsum, and other substances. Ammonia extracts from this opionin, which may then be separated from the filtered solution by hydrochloric or acetic acid, and afterwards purified. It is crystallizable, easily soluble in alcohol or ether, scarcely so

in boiling water, is neutral, and appears to be free from nitrogen. The quantity thus far obtained by Hesse was too small to ascertain its composition.—*Liebig's Annalen*, 228, 299.

Tartar Emetic and Rochelle Salts.—A serious mistake was lately found to have been committed by a wholesale house in Philadelphia, which had been selling tartar emetic in place of Rochelle Salt, probably owing to the carelessness or ignorance of one of its workmen. A number of persons who had purchased Rochelle Salt at a retail pharmacy were taken violently ill, and the above fact was ascertained as being the cause of the illness. Presumably, the wholesale house succeeded in getting back all the tartar emetic thus sold, as no further cases of poisoning have since been reported.

Pill-Excipient.—The following is furnished by a correspondent of the *Chemist and Druggist*:

Glucose syrup 12 parts (by weight)
Glycerin 4 "
Water 1 part.

American Druggist

Vol. XIV. No. 10.

NEW YORK, OCTOBER, 1885.

Whole No. 136.

FILTER-PRESS FOR LABORATORIES.

WHILE filter-presses have found extensive employment in technical industry, but little use has heretofore been made of them in chemical laboratories. The chief cause of this has probably been, that the work to be done in chemical laboratories varies from day to day, and the filter-presses would have to be thoroughly cleaned for each new operation, while in the technical establishments filter-presses are usually employed for the same kind of substance day after day. Further, in chemical laboratories, the liquids to be separated from solids are often strongly alkaline or acid, and would soon destroy any metallic apparatus.

A filtering press suitable for a chemical laboratory must possess the following qualifications: 1. It must be easy to take it to pieces and to clean it; 2. All portions of it which come in contact with liquids must be of glass, or porcelain or india-rubber.

Such an apparatus, constructed by Walther Hempel, is described below (after *Ber. d. Deutsch. Chem. Ges.*, 1885, 1434).

B is an iron stand into the bend of which is laid a gutter of glass, *e* (made by splitting a large glass-tube length-wise), and two large glass-plates, *dd*, which rest in the gutter. *AA* are the filters proper, and *C* is the water-supply. The filters are composed of two perforated porcelain discs *aa*, and a thick but soft india-rubber ring *b*, through a hole in which passes the glass-tube *c* (about 1 centimeter in diameter), which conveys the water or liquid to be filtered.

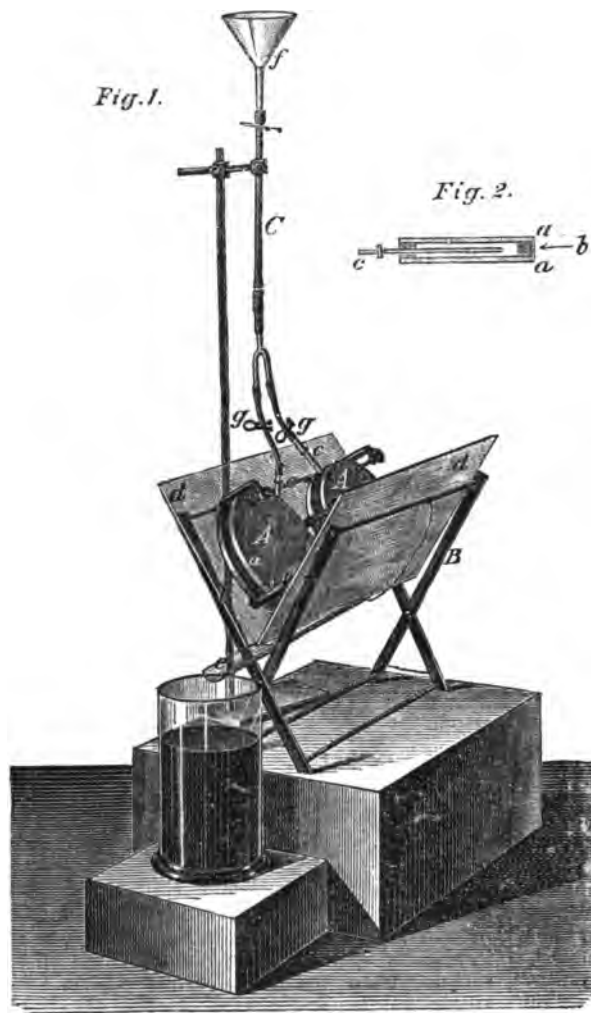
When the apparatus is to be used, either one or both of the filters are taken apart, a coarse piece of linen cut of the proper shape is first laid on one of the porcelain discs, and upon this a piece of filtering paper. The rubber ring is now laid on, next another piece of filtering paper, a piece of linen, and the second porcelain disc. The whole is then screwed together by means of four set-screws, protected by rubber tips. In this way, cells are formed which have filtering walls on both sides. The glass-tube *c* entering each cell is connected with a pressure system, obtained by placing the reservoir at a height of at least 6 to 9 feet. If possible, it should be still higher. When a liquid is to be filtered, it is poured, together with the precipitate, into the funnel at the very top, when it will pass through the filter-sides, leaving the sediment behind. At first the liquid runs off in a strong stream. Gradually, when the cell becomes filled with sediment, the liquid passes more slowly until it only runs in drops. If it is desired to wash the sediment thoroughly, it is best not to allow too large a cake of the sediment to collect, but to interrupt the addition of new material when the filtrate changes from running in a stream to passing through in rapid drops. The pinch-cock *g* having then closed, and the glass-tube *c* having been drawn back until it merely passes through the rubber-ring and no further, the filter is now connected with distilled water under pressure.

When the rubber-rings are not in use,

they should be kept under water. This will prevent their spoiling for years.

Quantitative Determination of Chlorate of Potassium in the Urine.

A MEASURED quantity of the urine is freed from any albumin that may be present by boiling, the liquid when cold brought to the original volume with water, and then filtered. A definite portion of the filtrate is then put into a bottle provided with an accurately ground stopper, some crystals of iodide of potassium added, and the contents strongly acidulated with hydrochloric acid, whereupon the bottle is carefully stoppered, and the stopper securely fastened. It is then placed for about fifteen minutes into a steam-bath. After being removed and cooled, solution of starch is added [the ori-



Hempel's filter-press.

ginal has "solution of iodide of zinc and starch," namely, the standard volumetric solution prescribed by the German Pharmacopoeia; but this is a gross blunder, since the free hydrochloric acid present would decompose the reagent itself. It is next titrated with $\frac{1}{10}$ normal solution of hyposulphite of sodium. The number of cubic centimeters of the latter consumed, multiplied by 0.0020433 gives the amount of chlorate of potassium present in the quantity of urine tested.

Steamed and Boiled Potatoes: their Relative Nutritive Value.

PROF. P. WAGNER says steamed potatoes are far more nutritious than boiled ones. With the latter, not only is more water taken up, but also nutritive salts are extracted by the surrounding water. The author publishes analyses in support of his opinion.—*Chem. and Drugg.*

[ORIGINAL COMMUNICATION.]

GLYCERIN OF COMMERCE.*

BY ROBT. B. WARDER,

Professor of Chemistry in the School of Pharmacy, at Lafayette, Ind.

WHILE the following paper was suggested by the query of the A. P. A. in regard to the requirements of the Pharmacopoeia, the products of the principal American manufacturers have also been compared with each other, and with samples from retail druggists of a few central cities. The French and German goods sold in the East have not been included; except, perhaps, in a single sample, No. 18, which was labelled "Sarg's C. P. Glycerin."

SAMPLES.

Nos. 1-12 represent the manufacturers, and were all procured from original packages in the hands of wholesale dealers, except No. 2 and No. 10; these brands are in less frequent use than the rest, and samples were procured from the manufacturers, to save the expense of expressage from distant places. No. 12 is a standard English brand, included for comparison.

No. 3 and No. 12 are sold in pound bottles, at a much higher rate than most of the rest, which are sold in cans or casks.

Nos. 13-20 were procured from retail druggists.

Every effort was made to have perfectly clean and dry bottles; but circumstances did not allow me to see to this personally in every case.

COLOR, ODOR, ETC., AND NEUTRALITY.

Each sample was a colorless viscid liquid, except No. 4, which had a pale straw color.

No odor was observed in the cold, except in a single sample, which had the disagreeable candle-like odor of crude glycerin. Personal observation convinces me that the same brand is not usually so contaminated.

When heated on the water-bath with the addition of half a volume of water,† odors were observed in seven other samples—two of them were very slight. The retail samples averaged better in this respect than those representing the manufactu-

rers.

No butyric or other acidulous odors were developed by warming with an equal volume of dilute sulphuric acid.

Very faint acid reaction was observed in some specimens (after dilution with one-half volume of water), but not sufficient in any case to redden litmus paper that was distinctly blue. Negative results were also obtained (after dilution with ten volumes of water) with blue paper slightly inclined to purple. A purple paper should have been prepared for the purpose, but this was omitted till it was too late.

SPECIFIC GRAVITY.

The densities were determined by a specific gravity bottles upon an accu-

† Read before the Thirty-third meeting of the American Pharmaceutical Association, and communicated by the author to this journal.

* Mr. Kennedy recommends heating with the addition of water, in a paper on Glycerin published in "Proc. Penn. Pharm. Assoc.," for 1884, p. 136; but this is not required by the Pharmacopoeia.

rate balance. Temperatures were noted (from 23.6° to 28.1° C.), and the density was calculated in each case for 15.5° C. by adding 0.0054 to the density found, for each degree centigrade. The results are given in the table appended, and refer to the density of water at 4° C. It will be seen that only four samples are fully equal to the requirements of the Pharmacopœia, while Mr. Kennedy's determinations (as reported to the Pennsylvania Pharmaceutical Association in 1884), showed very little deficiency in this respect. The bottles were all kept tightly corked until these determinations were made; and although Nos. 1-15 were examined on a damp day, the neck of the bottle used was wide enough to allow of prompt filling and discharge, and the moisture absorbed during manipulation must have been inconsiderable.* The bottle was carefully tested with distilled water. Reference to water at 15.5° C. instead of its maximum density, with the most liberal probable correction for temperature of the glycerin, would scarcely add 0.002 to the densities reported. This margin of allowance

glycerin itself to be thrown away, before pouring into the test bottles. The latter were filled one-eighth full with the several samples; they were then filled half full with distilled water and well shaken, in order to diminish the viscosity and facilitate the final mixing with the reagent. Each bottle was nearly filled with a five-per-cent solution of silver nitrate, well shaken, and placed on white paper with uniform exposure to diffused light. The bottles were taken in order as numbered, and the last was in place five minutes after No. 1 had received the silver solution. Care was thus taken to secure uniformity in the conditions. The last two test bottles were filled with silver nitrate and distilled water respectively, for purposes of comparison. The bottles were observed from time to time during five hours' exposure to ordinary daylight; afterwards they were kept in the dark and observed at intervals for fifteen days. The more important changes are noted in the table. There was no immediate change of color in any sample; the promptness and speed of the deepening of color and formation of precipitate

interior of a well-lighted room, but was protected from the direct glare of the windows.

No. 4 had a decided precipitate after three hours; No. 10 had a smaller amount at the same time. Three samples only showed precipitate on the day of mixing; seventeen contained solid particles after three days; No. 12 alone was free from precipitate after ten days, and a few little specks were seen in this after fifteen days. The blank test containing silver nitrate and distilled water remained perfectly limpid for ten days, and showed only the slightest discoloration at the time of the last observation. This precaution was deemed needful to demonstrate the purity of the water used.

The table shows considerable variation among the several brands, but no manufacturer should be condemned from the results of these experiments with single samples. Considerable variations among samples of the same brand have been noted. The requirements of the Pharmacopœia should be more definitely stated in the next revision; and if there should be sufficient demand for the utmost possible purity, an investigation should be made to determine the conditions needful to secure constant results; especially the influence of light, time, and excess of silver nitrate. With the present reading of the Pharmacopœia, probably not more than one of the samples would be condemned, as the analyst does not usually think needful to wait more than a few minutes for a reaction to take place. The retail samples average quite as well as those representing manufacturers.

TESTS FOR SUGARS, ETC.

1. *Evaporation Test.*—The Pharmacopœia requires that not more than a black stain shall remain when about two grammes of the glycerin are heated to boiling in a small capsule on the sand-bath, and then ignited; while sugars leave a porous coal. It may be assumed that the lamp is to be removed when the vapors are ignited, but this is not expressly stated. Variations in the intensity of the heat led to some misleading results, and the following plan was finally adopted. About two grammes of glycerin were poured into a small platinum crucible, which was placed in an inclined position (to facilitate access of air) deep in the sand-bath. When the liquid began to boil, the vapors were ignited and the lamp removed. The liquid then burned away to the last drop. Comparative tests were made with glycerin containing one-half per cent of sugar, added as syrup to insure solution. In this case, a considerable mass of porous black residue was always left. The samples of glycerin nearly always left something more than a "black stain;" there were traces of porous substances of yellowish-brown to dark color, which quickly swelled and carbonized when exposed to the flame. The volume of this residue before carbonization, even when most abundant, was judged to be about one-third as great as the residue left under like circumstances by the same quantity of glycerin containing 0.5 per cent cane sugar.

2. *Sulphuric acid test.*—The Pharmacopœia requires that glycerin shall not become dark-colored when warmed with an equal bulk of concentrated sulphuric acid. Some preliminary experiments gave variations from a straw color to a deep amber with the same sample on simply mixing the two fluids. Heating in the flame resulted in carbonization and frothing. Comparative tests were accordingly made with glycerin containing 0.5%, 1%, and 2% of cane sugar respectively; the first, when mixed with an equal volume of acid, became very dark-colored, but was not quite opaque for some time.

No.	SOURCE.	Specific gravity.	Color and precipitate with AgNO ₃ after					
			½ hour.	1 hour.	2 hours.	5 hours.	3 days.	10 days.
1	American Glycerin Co., Cincinnati, O., "No. 1".	1.248	1	3	4	4	C	E
2	American Glycerin Co., Cincinnati, O., "C. P."	1.250	1	3	3	3	B	B
3	Henry Bower, Philadelphia, "Pure."	1.247	1	3	4	4	C	D
4	Goodwin Manufacturing Co., St. Louis.	1.248	4	5	7	B	E	F
5	W. J. M. Gordon, Cincinnati.	1.253	1	3	4	4	C	E
6	Hartmann, Laist & Co., Cincinnati.	1.249	1	1	1	3	B	B
7	Hartmann, Laist & Co., Cincinnati.	1.249	1	1	1	2	A	B
8	Kirk & Co., Chicago.	1.253	1	4	6	6	C	D
9	Marsh & Harwood, Cleveland, "28°"	1.229	1	3	4	4	C	F
10	Marsh & Harwood, Cleveland, "80°"	1.244	2	4	7	B	E	F
11	Marx & Rawolle, New York.	1.258	1	2	3	3	A	D
12	Price, London, England.	1.248	1	2	2	2	A	A
13	Retail Druggist, Chicago.	1.249	1	1	2	3	C	F
14	Retail Druggist, Chicago.	1.246	1	2	2	3	B	C
15	Retail Druggist, Cincinnati.	1.248	1	3	3	3	B	C
16	Retail Druggist, Cincinnati.	1.246	1	4	4	4	B	B
17	Retail Druggist, Cincinnati.	1.247	2	4	4	4	C	D
18	Retail Druggist, Cleveland, "Sarg's."	1.246	2	4	7	B	E	F
19	Retail Druggist, Cleveland.	1.248	1	3	4	4	C	F
20	Retail Druggist, Cleveland.	1.246	1	2	3	3	B	C

EXPLANATION.

Color.

1. None.
2. Almost clear.
3. Very pale.
4. Pale tinge.
5. Pale violet.
6. Gray.
7. Distinct violet.

Precipitate.

- A. None.
- B. Very slight.
- C. Slight.
- D. Medium.
- E. Considerable.
- F. Heavy.

would bring the majority within the limit of 1.250; and if the retail samples are diluted by a few tenths of one per cent of water beyond the standard, this is as likely to arise from unavoidable circumstances as from intent or carelessness. Nos. 9 and 10 are not so high as we would expect from the claims of the makers.

ACRYLIC ACID, ETC.

Special importance is attached by manufacturers to the test with silver nitrate for acrylic acid and similar impurities, arising from a partial decomposition of fats. The Pharmacopœia states that there should be "no coloration," without specifying the time of action, nor the amount of exposure to light. Much care is required to secure absolute cleanliness in applying this test, as even traces of insensible perspiration from the fingers may invalidate the result. Twenty-two 2-drachm bottles with glass stoppers were accordingly very thoroughly washed; the lip of each sample bottle was carefully wiped with paper, and then rinsed with a portion of the

varied greatly. The observations could have been rendered more accurate by providing a series of standard colors, in similar bottles from permanent materials, with which to compare the silver solutions reduced by the glycerin from time to time. The terms used must be understood to be relative merely; for the manufacture of glycerin in this country has been brought to such a degree of perfection that what would usually be called a very slight reaction is recognized in this test as a distinct color.

A reddish or violet tint usually appeared after a longer or shorter time, changing to gray as the precipitates began to form. The early appearance of a distinct lead gray in No. 8 was quite exceptional. The several samples did not maintain the same order of discoloration, when observed at different times. Thus after one or two hours, No. 12 was less limpid than No. 6; but after five hours the former seemed unchanged, while No. 6 was decidedly deeper. The amount of light present also has a very great influence; one test exposed near a window to diffused light from the clear sky became about as dark in twenty minutes as a duplicate test which had been prepared two hours before, and which faced the

* Mr. Kennedy found that glycerin of 1.26 spec. grav., exposed to the atmosphere in an open flat jar, absorbed 7% of moisture in seven days. "Proc. Amer. Pharm. Assoc.," for 1879, p. 725.

After a few hours it was black; the second and third tests became black and opaque at once.

Moderate variations in temperature may have marked influence upon the intensity of the reaction; and experiments were therefore made to see how much variation was likely to result from differences in the relative amounts of glycerin and acid. Ten cubic centimeters of each, at 24° C., rose to 97° C. on being mixed, showing an increase of 73° from the reaction. Five C.c. glycerin mixed with 10 C.c. acid rose to 98° C. Ten C.c. glycerin with 5 C.c. acid rose to 91° C. It thus appears that considerable variations in the quantity of acid may produce little variation in the temperature if the acid is in excess; but two liquids of such viscosity are liable to be imperfectly mixed in a test tube, unless special care is taken. If an excess of acid remains in contact with the glycerin, it may first remove the water and then begin a process of carbonization. In several instances where the liquids seemed to be thoroughly mixed with the production of a straw-color, a dark ring was observed near the bottom of the tube after some minutes, indicating that an excess of acid in that part had escaped thorough mixing.

When no flame was applied to the mixture, a deep amber was the darkest color obtained, and this was characterized by a strong fluorescence. The color in no case approached that produced immediately by glycerin No. 6, containing 0.5% of cane-sugar.

From these two tests we may safely conclude that no sugar or like materials had been added to any of the samples examined; but either the destructive distillation of pure glycerin or its dehydration with sulphuric acid, may yield traces of substances of higher molecular weight, very similar in deportment to sugar.

The use of Fehling's solution, after prolonged boiling with acid, was considered superfluous for the object in view.

MINERAL IMPURITIES AND OXALIC ACID.

Diluted with ten volumes of water, each sample remained perfectly clear with addition of barium chloride, calcium chloride, ammonium oxalate, and ammonium sulphide. Sulphates, oxalates, calcium salts, and the heavy metals are therefore absent. The residues left on evaporation were combustible, leaving no ash.

CONCLUSIONS.

The twenty samples tested conform very nearly to the requirements of the Pharmacopœia, though a very slight excess of moisture is indicated in several instances; one sample had a disagreeable odor; one also had some color, and gave distinct reaction with silver nitrate within half an hour. The manufacturers maintain a high standard of excellence, and retailers, so far as observed, do not adulterate the goods in their stores. It should be mentioned in this connection, however, that adulterations are not unknown in the East. Cane-sugar seems to be generally used for this purpose, since glucose is very readily detected by Fehling's solution.

ACKNOWLEDGMENT.

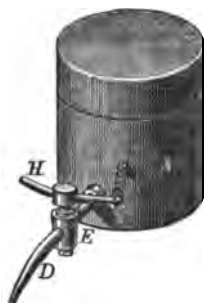
My sincere thanks are due to Prof. J. U. Lloyd for many suggestions and other assistance during the course of this investigation.

Chloral Hydrate and Carbolic Acid, when mixed in the proportion of 1 part of the former to 1.7 parts of the latter, melt to a liquid which is soluble in water in all proportions.—*L'Un. pharm.*

APPARATUS FOR POURING MERCURY IN A FINE STREAM.

H. WESTIEN, of Rostock, states that the below-described apparatus has been found very serviceable in laboratories where mercury is frequently used for filling thermometer- or other tubes.

A is a wooden box into which is fitted, a short distance above the bottom, a steel faucet *E*, ending in a curved and finely drawn out nozzle *D*. At *E* is a most carefully ground faucet with handles, one of which is connected with the box by a spring. On pressing with the hand, or any disengaged finger of the hand which may hold the tube to be filled, against the branch *H* of the handle, the faucet



Westien's mercury-pourer.

may be opened more or less so as to permit the mercury to flow out. By merely releasing the pressure, the faucet closes itself.—*Zeitsch. f. Instrum.*, 1885, 199.

APPARATUS FOR CONVEYING OFF NOXIOUS GASES.

Most of the contrivances used in laboratories for conducting away noxious gases are in form of cases, having a door or sliding window in front and a ventilating shaft above. These cases are usually somewhat dark so that it is difficult to work in them. The noxious gases which are given off at first fill up the outlet, from which they are then eliminated by gradual ventilation.



Hempel's fume flue.

The gas has meanwhile become so diffused through the air contained in the case, that the chimney, which could otherwise have easily aspirated and carried off the gas itself, is no longer able to draw up the volume rapidly enough to prevent leakage through the cracks or crevices of the case.

This drawback is completely removed, if an arrangement like that shown in the cut is used. A narrow slit *a* is cut obliquely upwards into the chimney, and upon two iron arms, fastened into the wall on either side, a large plate of glass is laid. Below this is placed the evaporating capsule with furnace or burner. As shown in the cut, a branch gas-pipe may also be conducted into the chimney, where a

light may be kept burning, if necessary, to increase the draft. Since all the air which is drawn into the chimney has to pass over the evaporating capsule, the whole of the escaping vapors are immediately conducted away.—WALTHER HEMPEL in *Ber. d. Deutsch. Chem. Ges.*, 1885, 1436.

Note on the Action of Lime on Quinine.

SOME years ago, Masse announced that quinine was partly decomposed by lime at the temperature of 100° C. This statement was afterward controverted by Passmore, and even by Prof. Fresenius.

Mr. A. R. Haslan now again investigated the subject. He operated on 4 Gm. of the best obtainable sulphate of quinine, containing 12.85 per cent of moisture, and—as the author continues—“thus equal to 3.48 Gm. of pure anhydrous sulphate.” This was dissolved in 100 C.c. of a 2-per-cent hydrochloric acid. The solution was then divided into portions of 10 C.c. each, each representing 0.348 Gm. of sulphate of quinine. To each of them 5 Gm. of hydrate of lime were added; five of the solutions thus prepared were evaporated to dryness over sulphuric acid, and the other five on a water-bath. All of them were then completely exhausted by ether in a continuous extraction apparatus.

In all the five experiments in which heat was employed, the author found a considerable difference in the quantity of alkaloid found and that which should theoretically be the yield, and which, though never in his experience exceeding 6 per cent (considerably below Masse's result) is yet sufficient to confirm the latter's opinion. The following table exhibits the results of the experiments:

	Loss. Heated to 100° C.	Loss. No heat used.
1.	0.018	0.001
2.	0.016	0.004
3.	0.021	0.002
4.	0.021	0.002
5.	0.017	0.001
Average, 0.018		0.001
	Average, 5.1%.	

It would also appear that lime decomposes quinine at a much lower temperature than 100° C., as 1 Gm. of sulphate, when exposed for four hours to a temperature of 70° C., and then evaporated to dryness over sulphuric acid, was found to have lost 0.032, or 3.2 per cent.—*After Chem. and Drugg.*

[Note by Ed. A. D.—There is no evidence that the author determined the amount of pure quinine in the salt examined by any other way than by deducting the amount of water. It is, therefore, impossible to vouch for the absolute correctness of his conclusions.]

Bleaching Linseed Oil.

ACCORDING to the *Independent Journal*, linseed oil may be bleached by the following process: Introduce about 18 pounds of the oil into a 6-gallon bottle or uncovered carboy, and add about 10 pints of a solution of 100 parts of sulphate of iron (copperas) in 150 parts of soft water. Then expose the vessel to direct sunlight, and shake the contents, at least once a day, thoroughly. The rate of bleaching depends on the temperature and intensity of sunlight. In place of the sulphate of iron, sulphate of lead may be used. For 100 parts of oil, 2 parts of lead sulphate are taken, first intimately mixed with a little of the oil, and then with the remainder.

Permanganate of Aluminium is reported to be used, or at least about to be used, as the active constituent in popular disinfecting liquids.

Precipitates in Fluid Extracts.*

In continuation of his previous investigations on the subject mentioned in the title, and on kindred phenomena, Prof. J. U. Lloyd presented a new series of facts and observations which are here given in a condensed form.

In the paper presented last year, he proved that a solution may be, as it were, disintegrated by means of the capillary action of a passive material, such as filter-paper or wood-pulp. A piece of filtering paper, for instance, partially immersed into the solution of some metallic salt, will soak up a portion of the solution, but in such a way that the highest point to which the liquid rises will contain more of the metallic constituent than portions situated farther down. Or else, two or more different substances may be in solution, which may be drawn up to different heights by partial immersion of filtering paper into the liquid.

The next point to which Prof. Lloyd devoted attention, was the question whether the dissociation above noted would take place also when the passive capillary body was immersed in the solution.

were probably due to unavoidable defects in manipulation.

It appears, therefore, that filtering paper dipped into such solutions not only soaks up a certain quantity of the solution, but also abstracts from that portion which it is unable to absorb a further quantity of the dissolved material.

Recognizing this fact, it might be inferred that unless the paper really has a decided affinity for the substance dissolved, the solution squeezed from it would be more concentrated than the original liquid. The result shows, however, that the contrary is true, for in no instance did the expressed fractions of any series contain as much dissolved matter as a like bulk of the original liquid; and in but two cases did it equal the solution after immersion of the paper.

The average total amount of substance recovered from two fluidrachms of the liquid expressed from the saturated paper is given in Column C of the above table.

The table also shows that each surplus liquid, after the saturation of the paper, contained a decreased amount of dissolved matter as compared with the original solution, and that with

the proportion of dissolved matter that was held by the original solution.

3d. Like amounts of the expressed liquids (as shown before) may vary greatly in composition.

In these experiments, dry, passive materials have been soaked in liquids that contain in solution the soluble substances with which the materials were brought into contact, while in the exhaustion of a vegetable drug the liquid is free from contamination, and the substances to be extracted are locked up in the dry plant, and there associated with the passive insoluble materials.

This is an important distinction, and the problem under consideration demands an investigation of that feature, which, owing to the length of this paper, will be deferred until another meeting.

In order to picture to the eye the decreasing ratio of solid constituents in the liquids manipulated with, the accompanying diagram is drawn up by Prof. Lloyd.

The numbered dots on the left side represent the corresponding original fluids. The first dot to the right (next to the numbered dots) represents the decrease in dissolved matter after saturation of the paper. Each succeeding dot represents the position of the corresponding fraction of expressed liquid. The figures on the left show the number of the experiment, and correspond with the numbers in the table.

Oleate of Mercury.*

THE subject of the query was the following: "Is pure oleic acid for the preparation of oleates equal to an acid which still contains some stearic acid?" From Prof. Emlen Painter's paper on this subject we abstract the more important portions. He says:

"The above query suggested to me the offering of a few notes on the preparation of Oleate of Mercury. This valuable therapeutical agent, which is so prone to decomposition when made by the usual method (and that of the Pharmacopœia) of heating together at a moderate temperature oleic acid and mercuric oxide, has been the subject of a number of experiments made in the endeavor to obtain a more stable article. I have used the various acids obtainable in trade channels, and I find little or no difference between the purest and the poorest acids, as regards the keeping qualities of the oleate. I have, however, been unable to either make or obtain an acid to correspond exactly with 'oleic acid' of the Pharmacopœia (aside from its sp. gr., which is evidently a mistake). Yet by first making 'lead plaster' from olive oil, litharge and water, dissolving out the oleate with petroleum benzin, decomposing this with muriatic acid, washing well with water, and evaporating the separated benzin solution, I had an acid which I think was as near that of the Pharmacopœia as may be obtained. It had a much higher sp. gr. and a slight odor and taste, otherwise it would stand the tests except as to the freezing point, which I did not take. Oleate of mercury made from this acid I could see but little if any difference in from that made with purified red oil; if there was any difference it was in favor of the red oil preparation. The red oil employed was carefully selected, and nearly all the stearic acid and other fatty acids were separated by Dr. Rice's method (*Am. J. P.*, Jan., 1873).

"I had employed in my experiments up to this time yellow oxide of mercury; I then substituted the very finely triturated red oxide, and found it dissolved more readily than the other, and made a more satisfactory product;

* Abstract of a paper read by Prof. Emlen Painter at the thirty-third annual meeting of the Am. Pharm. Assoc. at Pittsburgh.

	A	B	C
	Two fluid drachms of original liquid.	Two fluid drachms of the liquid remaining after saturation of the paper.	Average in two fluid drachms of the mixed expressed liquids.
No. 1 Hydrochlorate of berberine	0.177 grain precipitate.	0.148=81% . . .	0.086=49%.
No. 2 Sulphuric acid.....	9.0 C.c. soda sol. req'd.	8.4=91% . . .	7.3=81%.
No. 3 Citric acid.....	15.2 " " " " " "	18.6=89% . . .	13.9=91%.
No. 4 Carbazotate of ammonium.	2.777 grains precipitate.	2.370=85% . . .	2.338=84%.
No. 5 Oxalic acid.....	9.4 C.c. soda sol. req'd.	9.2=98% . . .	3.9=51%.
No. 6 Hydrochlorate of quinine.	1.182 grains precipitate.	1.100=93% . . .	0.857=78%.
No. 7 Bisulphate of quinine.....	3.481 grains precipitate.	3.371=97% . . .	1.818=88%.

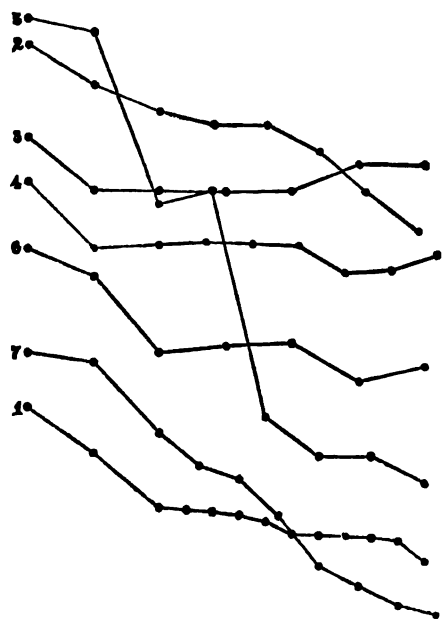
The average loss from the solutions, after saturation of papers, was 9 per cent.
The average loss from the solutions, obtained by pressure, was 33 per cent.

The experiments were conducted in the following manner: Solutions of known strength of certain chemical compounds were made, and in a definite portion of each some filtering-paper was immersed, then removed and subjected to expression in such a way that the expressed liquid was collected in portions for the purpose of ascertaining whether the different fractions contained different relative amounts of the substance dissolved. The remaining solution was also examined, to determine whether its strength had been diminished. The results obtained with the substances experimented with are given in the above table.

Explanation.—A solution of citric acid [see Table, No. 3], in water was prepared of such strength that two fluidrachms [this is the amount of solution understood in each case] required for complete saturation 15.2 C.c. of normal soda solution. After filtering paper had been dipped in the solution, the remainder of the latter had become weaker, so that two fluidrachms required only 13.6 C.c. of soda solution. Similarly, a solution of bisulphate of quinine (No. 7), when assayed by precipitation with picrate of ammonium, and yielding 3.481 grains of the precipitate from two fluidrachms of the solution, only contained 3.371 grains in the same volume after paper had been dipped in it.

The liquids pressed from the filtering-papers in fractions showed considerable discrepancy. In most cases, each succeeding fraction contained less of the dissolved matter than the preceding one. In a few cases, some succeeding portions were stronger in contents of dissolved matter than previous ones, but these discrepancies

one exception (No. 3) there was a marked decrease in the averages of the expressed liquid, as compared with the surplus liquid. There was a loss of nine per cent in the saturated solutions and of nearly one-third (33 per cent) in the expressed liquids, from which general result the author deduces the following:



Explanation.—The dots on left side represent the original liquid. The first dot on the right represents the decrease in dissolved matter after saturation of the paper. Each dot thereafter represents the position of the corresponding fraction of expressed liquid. The figures on the left show the number of the experiment, and correspond with our text and the table. In order to bring all the experiments into the numbered space, they were not taken in natural order and are shown in different colors.

1st. The dipping of substances like filter paper into such solutions as we have here considered may be attended by a separation of dissolved matters.

2d. Liquids expressed from such materials do not necessarily contain

* Abstract of a paper read at the meeting of the Amer. Pharm. Assoc. at Pittsburgh, by Prof. J. U. Lloyd.

also, the more prolonged the heat (even at the very moderate temperature of 120° F.) the sooner the oleate evinced a change, by assuming a bluish hue on the surface, from reduction of the mercury. My experiments further demonstrated very clearly to my mind that no heat whatever should be employed in making this preparation. The oxide and acid combine readily without, even to saturation of the acid, and in the winter season it is but a question of a few days, while at this season of the year one day will suffice to make the finished oleate. . . .

"My mode of manipulation is this—to first thoroughly triturate in a liberal-sized mortar any convenient quantity of red precipitate until it is reduced to a uniformly very fine powder, then mix the required amount of oleic acid (so as to have 20 or 25 per cent of the oxide) in such a way that there will be no lumps, and a perfectly smooth and uniform mixture will be the result—this is the only difficult part of the operation—then set the mixture aside for a few hours, when again mix thoroughly, and if the mixture has lost, or nearly so, the red color, put it in suitable vessels, which should be completely and tightly covered, so as to exclude the air; if, however, the mixture has still a deep color, showing that the red oxide is yet uncombined, from low temperature or other causes, again set aside; this operation is to be repeated as often as may be required, two or three times at furthest will suffice; after standing a day it will be found to have entirely lost its red or pinkish cast and to have assumed the yellow color of the oleate; the water formed by the reaction is of course admixed, probably forming a hydrate, as there is no appearance of free water being present. The following equation shows the reaction:

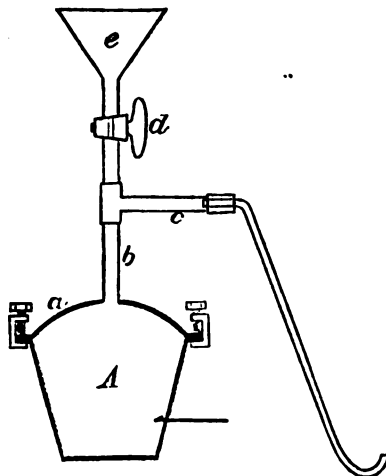


"Now, to come to the query, as relates to the mercurial compound 'is pure oleic acid equal to acid containing a portion of stearic acid?' For making an oleate of the official strength I would say, it is not, and that the quantity of stearic acid present should be sufficient to make the finished product the consistence of a soft solid. But for making a 20 or 25 per cent solution I can see no disadvantage in employing as pure an acid as may be obtained, at the same time I consider purified red oil, before mentioned, and as prepared by Dr. Squibb and other manufacturers, all that is to be desired in making this oleate. I find it to be more satisfactory in practice than an acid from lard oil made by Dr. Squibb, although the latter is presumably purer from the fact that it is sold at just three times the price. It doubtless contains less of the oxy-oleic acid, the samples examined having a less marked effect upon test paper; it, however, seems to have as much odor, and as deep a color, and I am inclined to the belief that it contains more or less non-decomposed oil, as it does not act so promptly on a given quantity of mercuric oxide. I have not had the opportunity to test its saturating power, however, or the stability of the product, as compared with the other acids." . . .

[When the concentrated oleate is to be reduced in strength, some neutral substance may be used instead of oleic acid. Prof. Painter says that he has

used petroleum ointment, oil, and plasma for this purpose. Regarding petroleum ointment, he says:]

"It has been repeatedly asserted that petroleum ointment (vaseline) should not be used as an excipient where the drug incorporated is intended to be absorbed; and from the experiments of Dr. Kiernan (*Drug. Cir.*, April, 1884) it would appear that absorption is prevented completely by the presence of vaseline, whilst with a lard excipient he had a decided effect. On the other hand, the experiments of Mr. E. Joerss (*AM. DRUGGIST*, August, 1885) would go to prove that petroleum ointment is the better excipient of the two. My experience has been, in dispensing the oleate of mercury, that quite as satisfactory results have been obtained from that diluted with vaseline as with



Hempel's oxygen apparatus.

oleic acid, and I have been informed by the patients using it that it was equally prompt in its action.

"I am inclined to believe that vaseline is a proper diluent for oleate of mercury where it is required of a less percentage of the base than the combining proportions, even if the oleate is absorbed less freely when much diluted, as the higher percentages are used,

he found it of advantage to mix about 25 per cent of ether with the oleic acid contained in a bottle, so as to render it more liquid. The oxide can then be shaken up with it, and when it is dissolved, the ether can easily be driven off by stirring in an open vessel.]

APPARATUS FOR PREPARING OXYGEN GAS.

WALTHER HEMPEL reports that, during his visit to New York in 1881, he saw an apparatus for preparing oxygen gas, which deserves to be more generally adopted. He could not ascertain who was the originator of it.

The apparatus consists of a cast-iron generator, A, with ground cover a, which is made tight by asbestos packing and clamps. Into the cover is fitted a tube, of about 1½ inch internal diameter, ending in a funnel above, and having a lateral branch for conducting off the gas. The tube c is connected with the gasometer by means of a rubber or glass tube.

When starting the operation, about 50 Gm. of chlorate of potassium is poured in the funnel, and allowed to fall into the apparatus by opening the faucet (which should have a bore of at least ¼ inch). The fire is then started, and as soon as oxygen gas commences to be given off, which may be recognized by a glowing match being rekindled when held down in the funnel, the faucet is closed, and the gas collected. When the current of the latter diminishes, which is recognized by the diminished flow of water from the gasometer, a fresh supply of 50 Gm. of the chlorate is put into the funnel, and made to fall into the retort by rapidly opening the faucet.

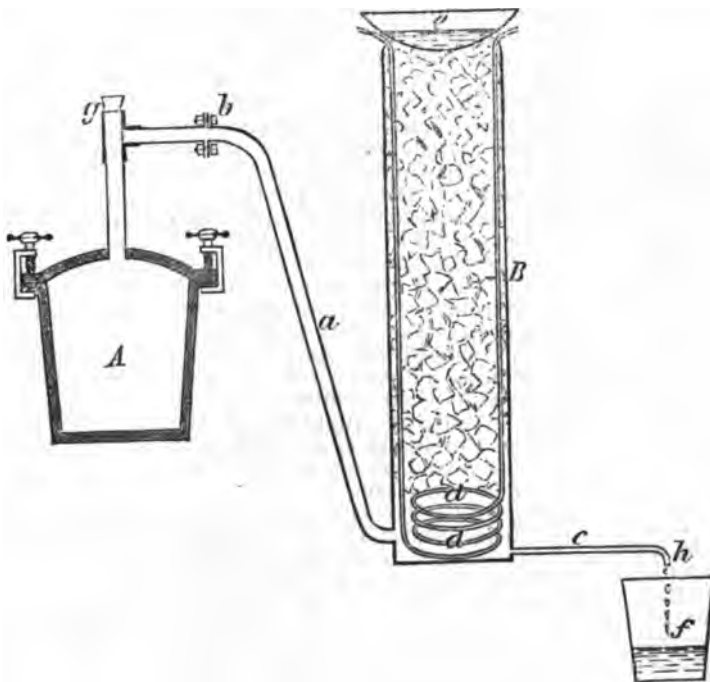
This mode of operating has the advantage that at no time are large quantities of chlorate acted on at once. After a short time, such an amount of chloride of potassium has been formed, acting as diluent, that no danger is encountered even if the gas is given off very violently.—*Ber. d. Deutsch. Chem. Ges.*, 1885, 1440.

PREPARATIONS OF HYDROFLUORIC ACID IN IRON RETORTS.

WALTHER HEMPEL has found that iron retorts may be employed in the preparation of hydrofluoric acid, provided only concentrated sulphuric acid is used to decompose the fluorspar.

An iron retort of the shape shown in the cut is connected with an iron pipe, about 1½ inches in diameter, which is connected at b by means of a flange with a lead pipe leading to the condenser. The latter is a lead cylinder, about 6 inches wide and 28 inches high, having an exit tube c at the bottom, and provided with a cooling worm d. It is filled with coarse pieces of wood charcoal.

The retort having been charged with 1 kilo each of fluorspar and concentrated sulphuric acid, heat is applied, best over a naked fire. The vapor passing over, rises through the pieces of charcoal, but is there encountered by water dripping downwards from a lead capsule placed on the condenser, into the bottom of which some fine holes had been punched, and which had been charged with about 750 C.c. (26 fl. oz.) of distilled water. When no more liquid drips from c, the contents of the lead receiver f are poured back into the capsule on top of the condenser, and the distillation continued until the retort is at a low red heat. On opening it, its contents of dry plaster



Hempel's hydrofluoric acid apparatus.

when a constitutional effect is desired and the lower percentages when used merely for the local effect. Besides, the different percentages then would be of about the same consistence, which is quite an advantage in the preservation and dispensing of this preparation.

"Since writing the above, I find that the lard-oil oleate does not keep so well as the red-oil oleate, both made in precisely the same way, at the same time, and with the same oxide of mercury."

[During the discussion following this paper, Mr. W. S. Thompson stated that

of Paris may easily be removed with an iron chisel.

The most simple method of purifying the hydrofluoric acid thus produced, according to Hempel, is the following:

Divide the product into two equal portions, slightly supersaturate one portion with ammonia, then mix it with the second portion, and evaporate in a platinum capsule. When properly concentrated, crystals of the acid fluoride of ammonium (hydrogen ammonium fluoride) crystallize out, which (after being separated from the liquid by a glass funnel, covered with wax, or an india-rubber funnel) may be re-crystallized, and thus obtained perfectly pure. This salt may be preserved in a wooden or paper box, without alteration, and may be used for most purposes for which hydrofluoric acid is required.—*Ber. d. Deutsch. Chem. Ges.*, 1885, 1438.

Fused Caustic Potash of Commerce.

MR. EDWARD GOEBEL, of Louisville, Ky., had undertaken the examination of this subject, forming the topic of a query, and from his report, read at the meeting of the Am. Pharm. Ass., held at Pittsburgh, we take the following.

Eight samples were examined, derived from four different sources. Without quoting the author's description of his method of analysis, we will at once give the results:

Sample.	Total Alkali, free and carbonated, calculated as hydrate.	Carbonate Potassium, K_2CO_3 .	Potassium, Hydrate KHO .	Chloride KCl .	Water.
A.....	77.251	7.85	70.88	1.009	20.261
B1.....	79.538	6.384	74.357	0.971	18.288
B2.....	78.26	7.898	72.26	0.929	19.418
C1.....	79.54	9.611	71.74	1.011	17.688
C2.....	76.77	11.092	67.281	0.167	20.86
D1.....	76.34	11.545	66.97	0.998	20.487
D2.....	76.19	15.848	63.332	0.801	20.024
D3.....	75.48	6.677	70.061	1.099	22.163

A glance at this table shows what is probably a well-known fact, namely, that the commercial stick-caustic falls far short of the official requirements, i. e., 90 per cent alkali, instead of which we have from 75 to 79 per cent. The water percentage varies from 17 to 22. The National Dispensatory states that commercial potassa usually contains "an excess of 6 to 8 per cent of water." The United States Dispensatory gives the amount at 15 to 28 per cent, a wider range of divergence than found to exist in the samples examined.

In order to ascertain if any of this excess of water might be gotten rid of in preparing a moulded caustic, a small quantity was prepared according to the official directions for making liquor potassæ, evaporating the clear solution to such density as would admit of its being poured into the mould. Two separate lots were made, and they assayed respectively 71 and 75 per cent of alkali, including a large percentage of carbonate. These results seem to indicate that the percentage of water in the commercial caustics can be but little, if at all, reduced if the product is to be moulded. The carbonate, ranging, as it does, from 6 to 15 per cent, seems to be in unduly large proportions, however. Our pharmacopœia gives no definite limit of carbonate allowed. Would it not be a desirable change in the Pharmacopœia to require a minimum alkali percentage of 75 in place of 90, which is unattainable in the convenient stick form which we are now using? And might it not

* 67 parts of this, instead of 56 parts of a 90-per-cent caustic, would be required for making liquor potassæ.

be well to give a quantitative test for carbonate, allowing, for instance, 5 per cent of this impurity?

Medicinal Properties of Rhamnus Purshiana and Rh. Catharticus.

In reply to a query regarding the relative degree of laxative action inherent to the above-mentioned drugs, Mr. George W. Kennedy read a paper before the Am. Pharm. Assoc., of which the following is an abstract:

Rhamnus catharticus requires a stronger alcoholic menstruum for extraction and for keeping the resinous matters in solution than *Rhamnus Purshiana*. 12 fluid ounces of alcohol, in the pint of fluid extract, are necessary in the former, and 11 fl. oz. are sufficient in the latter case. The taste of the two fluid extracts differs somewhat, particularly in this that *Rhamnus Purshiana* is more intensely bitter.

As to their relative medicinal effects, Mr. Kennedy states that the reports of the medical gentlemen who made experiments with them, agree quite closely, and quotes as an example the following notes from Dr. I. T. Wiltrout, of Hudson, Wis.

"The samples of fluid extract of *Rhamnus catharticus* and *Rhamnus Purshiana* given me for trial have more than met my highest expectations. I used these preparations in cases of constipation characterized by atony or paresis of the muscular coat of the bowels, induced by a catarrhal condition of the stomach and small intestines. They gave free evacuations in small doses, say from 30 to 50 drops, with no pain, and materially improved the appetite. The evident action is upon the nerve terminals and in this way reflexly stimulating muscular contractility and glandular secretions. The common experience was that a diminished dose was needed to assure the daily purpose. I also used the remedies on women in whom the colon was allowed to distend from neglect and inattention; in all instances they were efficient. I think these remedies might be usefully prescribed with aloes when there is no pelvic or uterine difficulty, and thus act on the whole bowel. I have prescribed these remedies in combination with the phosphate of sodium in chronic constipation, attributable to a bilious condition. It wonderfully accelerates the action of the phosphate and arrests a sick headache promptly, and does not deplete the system. I think these remedies have a wide province, and if the extracts are always as reliable as those you sent, will be used in the cases enumerated. I have prescribed these remedies in a large number of cases and my conclusions as to their relative strength is, that a smaller quantity of the *Rhamnus Purshiana* is required both as a laxative and as a cathartic, but it is a little nauseating."

In regard to the squeamish action of the drug noticed by Dr. Wiltrout, in the *Cascara Sagrada*, this has likewise been observed in the bark of the *Rhamnus Frangula* the first year after gathering, but when two or three years old, it retains only the purgative power, and is much similar in its effect to that of rhubarb, consequently most authorities forbid its use until two years from the time it is gathered.

Solubility of Lithium Carbonate in Water.

RECENT experiments made by Bewad show that carbonate of lithium is soluble:

in 71 parts of water at 10° C.
" 75 " " 20° C.
" 85 " " 50° C.
" 187 " " 100° C.

At 15° C. (59° F.) the solubility will be about 1 in 80.

Peptone Soup.

THE administration of artificially digested or peptonized food to persons suffering from enfeebled or diseased digestive organs has become a recognized form of treatment, and is, in many cases, the only means by which life can be prolonged. Quite a number of peptonized foods are obtainable in the market, yet there are many localities where they may not be readily procurable, or some other reason may exist for preparing them at home. In such cases, the following directions, which Dr. W. Jaworski, of Karlsbad, is in the habit of giving, will be found to produce an excellent product:

Procure each day a suitable piece of beef (best from the back), or of veal (from quarter), free from bone, sinew or fat, and scrape it with a blunt knife until one pound has been scraped off. It takes at least two pounds of butcher's meat to obtain that quantity. Place the scraped meat into a pot (not made of metal, or at least perfectly lined), then pour on 1 quart of soft water, and mix with a wooden spoon. Next add, constantly stirring, 1½ fluid-ounces of diluted hydrochloric acid, and afterwards 8 grains of "Pepsinum Germanicum solubile" [in place of this it will much preferable to use the American scale pepsin]. Mix intimately, place the pot over night on a warm stove or other suitable apparatus [it should not feel hot to the hand], and see that it is occasionally stirred up. Next morning boil the contents at a moderate heat, frequently stirring, until they have become a homogeneous pulp, which will require one or two hours. [Care should be taken lest the mass become too dry. A little boiling water may be added from time to time.] Then remove any fat that may float on top, and strain through a sieve or colander, to free the pulp from any remaining fibres or undissolved pieces, diluting the mass, for this purpose, with boiling water, if necessary. Finally, add enough of a ten-per-cent solution of carbonate of sodium, until the acid taste has been nearly all removed.

Many patients will partake of this soup without further seasoning. Others again do not like to take it without. For this purpose, Dr. Jaworski recommends to roast 1 or 2 spoonfuls of flour with a little fresh butter, and to add this to the soup; or he directs 4 oz. of the juice of roast-beef (free from fat) to be added. In some cases, the addition of sugar or wine, or rum, or cognac will make it more palatable. It tastes best when it has a faintly acid taste and is eaten warm.

A quantity of soup prepared from 1 pound of meat is usually sufficient for the daily use of one patient. In summer, it must be prepared fresh every day. In the cooler season, a somewhat larger quantity may be made, and this may be prevented from spoiling too rapidly by the addition of about 8 grains of salicylic acid per pound of meat. —*After Deutsch. Medic. Zeit.*, July 20th.

Remarks on the Construction of Chemical Equations.

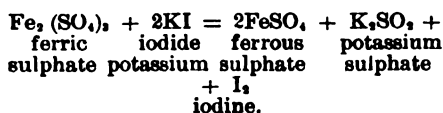
As a supplement to the article with the above heading published in a recent number (page 151), we would mention that Mr. James Bottomley, in a note to the editor of the *Chemical News* (July 10th) draws his attention to the fact that he was the first to use such a method, and that it was first published in the "Proceedings of the Manchester Literary and Philosophical Society," vol. xvii. (session 1877-78), and afterwards reprinted in the *Chemical News*. He gave the method in a general form, and some applications of it. It has, however, remained almost unknown, and has not found its way into any text-book of chemistry.

A NEW METHOD OF QUANTITATIVE ESTIMATION OF IODINE, BROMINE, AND CHLORINE, WHEN PRESENT TOGETHER.

THE following method, devised by G. Weiss, of Hamburg, has just been made public:

If iodine, bromine, and chlorine are present in oxygen acids, they must first be reduced to more simple compounds, which may be accomplished by hydrosulphuric acid, sulphide of calcium, hyposulphite of sodium, or other agents. If they are present in a free state, or combined among themselves, they are best converted into easily soluble zinc salts by simply agitating with zinc dust. It is not necessary that metallic iodides, etc., that may be present, should be soluble in water, since even insoluble ones (as cuprous iodide) are easily decomposed by the below-mentioned process. The best results are obtained when the solution is as neutral as possible and free from salts of ammonium.

The operation is conducted in the apparatus shown in the cut. The liquid in which the halogens are to be estimated is put into the tube *b*, together with a small excess of moderately concentrated solution of neutral ferric sulphate. The tube is immediately connected with the absorbing vessels *c*, *d* (and if necessary even a third one), which contain a concentrated solution of iodide of potassium, and a current of air, entering at *a*, immediately aspirated through the apparatus. The contents of *b* are then gently warmed with a small flame, and afterwards more strongly, to boiling. The current of air and steam then carries the whole of the iodine (which is liberated) into the absorbing vessels. The reaction is as follows:



In the solution which has absorbed the iodine, the latter is determined by titrating with hyposulphite of sodium. Not a trace of bromine is carried over if the solutions are neutral.

The residue in *b* is now cooled, and the two absorbing vessels *c* and *d* are charged with dilute ammonia. After the current of air has been started again, permanganate of potassium (in not too large excess) is added to the contents of *b*, and the connection having been made, the tube heated to 50° or 60° C. (122°–140° F.) by means of a water-bath. Very soon the bromine will begin to be given off, and after about one hour the whole of it is usually carried over. The bromine may be determined volumetrically by silver solution; best, however, gravimetrically, as silver bromide.

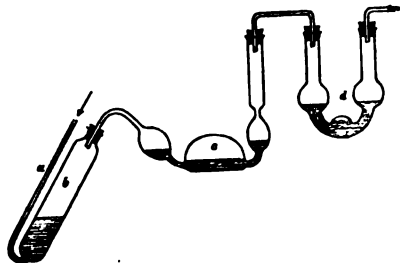
The chlorine still contained in the residue might now be determined gravimetrically, but the presence of the foreign substances interferes with accurate results. It is preferable to determine, in a fresh portion of the original solution, the whole of the iodine, bromine, and chlorine as silver salt, and then to deduct from this the amount of iodide and chloride found.—*Repert. d. Anal. Chem.*, 1885, 238.

Paraldehyde an Antidote to Strychnine.

ACCORDING to the *Chemiker Zeitung*, Professor Bokai, of Klansenburg University, has found paraldehyde to be an excellent antidote to strychnine, rabbits having been found to bear with immunity ten times the lethal dose of strychnine when the poison had been previously mixed with paraldehyde.

Chloraldehyde has often been used in cases of poisoning with strychnine, but this substance acts injuriously on the heart, which paraldehyde does not.

In cases of human poisoning, Professor Bokai recommends a dose of from 6 to 10 grammes of paraldehyde twice daily until prolonged sleep sets in; but at present no case has occurred admitting of experiment. Herr Bokai further suggests the use of paraldehyde as an antidote to brucine, thebaine, and picrotoxin. Simultaneously with Bokai, Cerrullo and Du-jardin-Beaumetz have likewise claimed the recognition of paraldehyde as an antidote to strychnine.—*Chem. and Drugg.*

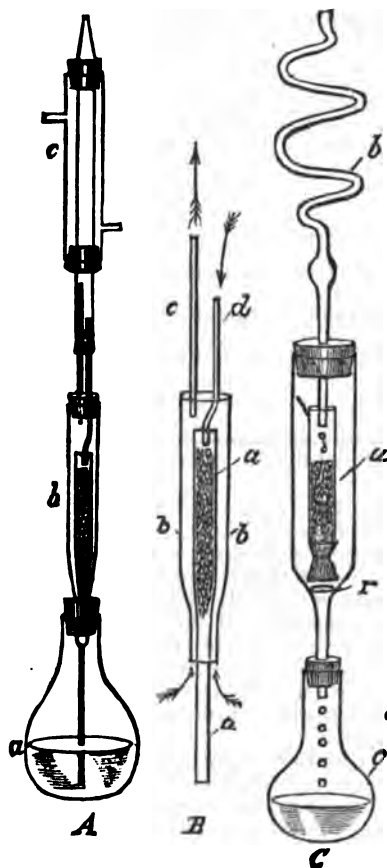


Weiss's apparatus for estimation of bromine, etc.

Ferrated Cod-Liver Oil.

THE iron salt most suitable for preparing a stable and agreeable ferrated cod-liver oil is probably the benzoate. Yet the commercial benzoate is often useless for this purpose, as it is frequently insoluble in fixed oils. It is, therefore, advisable to prepare this salt fresh, when wanted, which may be done in the following manner:

60 parts of artificial benzoic acid (made from toluol) are dissolved in 300 parts of boiling water and mixed with 102 parts of official water of ammonia (of 10%). This solution of benzoate of ammonium is gradually, and under stirring, mixed with 100 parts of solution of ferric chloride



Johnson's apparatus for continuous extraction.

(*Germ. Pharm.*, 10%; or 26½ parts of *Liquor Ferri Chloridi*, U. S. *Pharm.*) diluted with 300 parts of water. The resulting precipitate is collected on a strainer and washed with water until the washings no longer give a chlorine reaction. The precipitate is then freed from most of the water by pressure, and dried.

20 parts of this benzoate of iron are triturated with 5 parts of benzoic acid (from toluol) and a little cod-liver oil to a smooth paste, then enough

cod-liver oil added to amount altogether to 1,000 parts, and the mixture digested one hour on the steam or water-bath, under constant stirring. The finished preparation is now filtered, and appears as a clear, brown oily liquid, containing 2% of benzoate of iron (or 0.3% of metallic iron), having a pleasant taste, and not liable to spoil.—C. SCHWARZ, in *Pharm. Zeit.* (July 4th).

APPARATUS FOR CONTINUOUS EXTRACTION.

THE apparatus devised by Tollens for the estimation of fixed oils in plants, and figured on page 100 of Mr. Greenish's translation of Professor Dragendorff's "Plant Analysis," suggested to me the following arrangement, which has been found very convenient for laboratory use.

Fig. *c* is a rough sketch showing the essential portions of Tollens' apparatus. The substance to be extracted is confined in tube *a*, which rests below upon a piece of curved glass rod, *r*. *b* is a condensing tube, which is, of course, surrounded by cold water, the condensed vapor of the solvent dropping back upon the substance in the tube *a*, and then into the flask *c*.

The chief difficulty which I encountered in working with Tollens' apparatus was that the vapor of the boiling solvent in the flask *c* was constantly blocking back the condensed solvent from above, thus hindering its return into the flask, and also into the tube containing the substance to be extracted, from the condenser.

Fig. *A* shows the apparatus by which this difficulty was overcome, whilst Fig. *B* shows the essential parts of the apparatus, freed from corks, etc.

In Fig. *A*, *a* is the flask for the solvent, *b* is the apparatus in which the extraction takes place, whilst *C* is an inverted Liebig's condenser.

The peculiarities of the extraction apparatus are best understood by reference to Fig. *B*.

In Fig. *B*, the tube *a* is for the reception of the solid to be extracted. The internal diameter of *a* may be about half-an-inch. It is drawn out below till the internal diameter of the constricted portion is about one-eighth of an inch, and the constricted portion is prolonged till it reaches nearly to the bottom of the flask for the solvent.

A plug of asbestos or glass-wool in the constricted portion of *a* prevents mechanical transference of suspended solid matter into the flask for the solvent.

The tube *a*, which has thus been described, fits loosely into the tube *b*, whose internal diameter may be about three-quarters of an inch, and its constricted portion about one-quarter of an inch in internal diameter. The constricted portion of the tube *b* just enters the top of the flask for the solvent, into which it fits air-tight by a perforated cork. The upper orifice of *b* also bears a cork perforated with two holes, one of which admits the tube *c*, through which the vapor of the volatile solvent finds access to the condenser, whilst the other gives entrance to the tube *d*, which conveys the condensed solvent back from the condenser into the tube *a*, containing the substance to be extracted. The tubes *c* and *d* enter the central tube of the condenser by a perforated cork. The vapor of the boiling solvent finds an easy passage between the tubes *a* and *b*, and the condensed solvent gets back into the flask down the tube *a* without being intercepted by vapor from below. Also the tube *d* (Fig. *B*), opening just inside the cork in the condenser tube, prevents accumulation of liquid in the latter, so that the apparatus, when once started, continues to work automatically. — GEORGE STILLINGFLEET, JOHNSON in *Chem. News*, July 24th.

Detection of Cane Sugar in Milk Sugar.

If equal parts of oxalic acid and milk-sugar are mixed, and the mixture heated on the water-bath, it melts and becomes at first but very faintly darker; on prolonged heating, the tint darkens slightly more. If, however, only one per cent of cane sugar is present, the mixture darkens very rapidly under the above circumstances; and if several per cent are present, it turns greenish-brown to black. Dr. Geisler has tested this method which was first proposed by Lorin (*Pharm. Zeitsch. f. Russl.*, 17, 373) and has found it reliable.—*Pharm. Centralh.*, No. 22.

Commercial Glycerin.

IN reply to query 34, "How does the glycerin of commerce conform to the requirements of the Pharmacopoeia?" Mr. Edward Goebel read a paper before the meeting of the Am. Pharm. Assoc. at Pittsburgh, in which he gives the results of the examination of fifteen samples, representing eight manufacturers, one English, three German, and four American. The following table exhibits the results:

SAMPLE.	Color.	Sp. Gr.	Reaction.	Odor developed by warming with dilute H ₂ SO ₄ .	Deposiment with AgNO ₃ solution after ¼ hour.	Deposiment with AgNO ₃ solution after 1 hour.	Deposiment with AgNO ₃ solution after 2 hours.	Deposiment with AgNO ₃ solution after 24 hours (liquid).
A.....	None....	1.253..	Neutral . . .	Perceptible...	Not affected . . .	Not affected....	Not affected.....	Pink color, black precipitate.
B.....	None.....	1.246..	Faint acid....	Perceptible...	Not affected . . .	Not affected....	Not affected.....	No color, brown precipitate.
C.....	None.....	1.253..	Plainly acid..	Plain.....	Yellowish color.	Reddish-yellow color.	Reddish-yellow color.	No color, brown precipitate.
D.....	None.....	1.238..	Faint acid....	Perceptible...	Not affected . . .	Not affected. . .	Not affected . . .	Not affected.
E.....	Yellowish	1.252..	Faint acid....	Plain.....	Not affected....	Pink color.....	Pink color.....	No color, black precipitate.
F.....	Yellowish	1.253..	Faint acid....	Perceptible...	Not affected....	Not affected....	Not affected.....	No color, black precipitate.
G.....	Yellowish	1.253..	Plainly acid..	Perceptible...	Yellowish color.	Yellowish-brown color.	Yellow brown color black precipitate	Yellowish-brown color, black precip.
H.....	Yellowish	1.253..	Neutral	Perceptible...	Not affected....	Pink color.....	Yellowish brown color	Reddish color, black precipitate.
I.....	Yellowish	1.254..	Plainly acid..	Perceptible...	Yellowish color.	Yellowish-brown color.	Yellowish brown color	Reddish color, brown precipitate.
K.....	Yellowish	1.253..	Plainly acid..	Plain.....	Pink color.....	Pink color.....	Pink color.....	No color, brown precipitate.
L.....	Yellowish	1.254..	Faint acid....	Plain.....	Pink color. . .	Pink color.....	Pink color.....	No color, brown precipitate.
M.....	Yellowish	1.253..	Plainly acid..	Plain	Not affected . . .	Pink color.....	Pink color.....	No color, brown precipitate.
N.....	None. . .	1.253..	Faint acid....	Perceptible...	Not affected . . .	Not affected....	Not affected.....	Not affected.
O.....	Yellowish	1.257..	Faint acid....	Plain.....	Not affected . . .	Not affected. . .	Not affected.....	No color, black precipitate.
P.....	None.....	1.257..	Neutral	None.....	Not affected....	Not affected....	Pink color.....	No color, black precipitate.

None of the samples were visibly affected by calcium chloride, ammonium sulphide or oxalate, or barium chloride.

On Guachamacá and its Relation to Curare.

DR. KOBERT, of the Pharmacological Institute of the University of Strassburg, recently published an interesting note on guachamacá in the *Pharm. Zeitung* (No. 51). He says:

The plant is considered as exceedingly poisonous throughout Venezuela. The word guachamacá occurs first in the year 1841, in a geographical work of A. Codazzi, where it is erroneously quoted as a synonym of *Ryania coccinea*. The first important notice on guachamacá was given by Ramon Paéz (1862) in his scenes of South American life; he states, however, that he had never seen the plant himself, but had only heard terrible stories about its poisonous character. It was related to him that persons who had roasted meat on spits made from the woody stem of the plant, had died after partaking of the meat. [A similar story is related of the oleander. A French soldier, in the neighborhood of Madrid, employed a decorticated branch of an oleander shrub as spit. Twelve soldiers partook of the meat, seven of whom died, while the others

were made dangerously ill. The cause was no doubt the poisonous principle oleandrin.]

And birds which had swallowed little fish coated with the juice of the plant were said to be killed at once by it. It was also related that a jealous wife mixed some of her husband's wine with the juice of the plant, causing not only her husband's death, but also that of eleven other persons.

The next author who mentions the plant is R. de Grosourdy, who described it in his *Médico criollo botánico* (1864), and correctly assigned it to the Apocynæ, giving it the name *Guachamacá toxifera*. He had, however, never seen the fruits, and only inferior specimens of the flowers.

In 1869, a learned pharmacist of Caracas, Mr. Ernst, obtained a leafy branch of the plant with two small roots, and had it examined pharmacologically by A. Frydensberg. It turned out that the roots were harmless, but the branches contained a quickly acting poison. According to the description of Ernst and the results obtained by Frydensberg, Sir Joseph Hooker declared the plant to be a *Prestonia*. At the Exposicion de Centenario por la Sociedad Patriótica

consider this alkaloid (*guachamacine*) as identical with curarine.

Dr. Kobert, on the other hand, thinks that further investigation will show the two to be identical.

If it should turn out so, the mystery still resting on the derivation of curare would be to a great extent removed. It is well known that there are various mother-plants of curare (they were chiefly examined by Planchon), and that different kinds of curare have different physiological effects. But the very best curare—as a commercial source for which the author mentions Thomas Christy, of London—comes from the Orinoco and Rio Negro, and it is just there that *Malonetia nitida* appears to be not uncommon. An apparent proof of the identity of the two alkaloids is this, that both of them differ from all others by being completely insoluble in absolute alcohol. Both also may be advantageously prepared from the crude tannate, and give a characteristic precipitate with phospho-tungstic acid.

Dr. Kobert concludes by recommending to drop curare, and to experiment with *guachamacine*, the preparation of which offers no diffi-

de San Fernando de Apure (1883), there were among other interesting things exhibited the wood, twigs, leaves, flowers, and fruits of the plant, from which Mr. Ernst has completed his description in 1884. From the structure of the fruit it became evident that the plant was not a *Prestonia* but a *Malonetia*. Hooker identified it afterwards as *Malonetia nitida* Spruce.

Further experiments by Frydensberg showed that the aqueous extract of the rind has a paralyzing effect on the muscles, while it does not affect sensibility.

In 1876, Carl Sachs was commissioned by the Berlin Academy to visit Venezuela, and his attention was drawn to this plant by Ernst. He also collected, with great difficulty, a considerable quantity of it, and found that it contained a poison resembling that of curare. After his death, J. Schiffer (1883) examined it further, and obtained, though not in a pure state, an alkaloid exactly corresponding to curare, that is, paralyzing the peripheral ends of the motory nerves, without affecting the muscles or sensory nerves. He does not, however,

culty. [This name is rather awkward and should be replaced by *malonetine*.—ED. AM. DR.]

Alkaline Dentifrice.

ALKALINE dentifrices or mouth-washes are becoming more and more popular. As the alkaline ingredient is usually bicarbonate of sodium which imparts a disagreeable taste to the mixture or solution, Pierre Vigier (in *Rép. de Pharm.*, 1885, 133) proposes the following combination in which the taste is tolerably well masked:

Bicarbonate of Sodium..... 20 Gm.
Alcoholate of Peppermint..... 20 "
Oil of Peppermint, finest..... 20 drops.
Carbonate of Magnesium..... 2 Gm.
Distilled Water..... 980 "

Mix the water and alcoholate, and dissolve the bicarbonate in the mixture. Triturate the oil with the carbonate of magnesium, add the previously prepared solution gradually, and filter.

[The alcoholate of peppermint is prepared by putting into a still 10 parts of fresh peppermint with 30 parts of alcohol of 80%, previously mixed with 10 parts of peppermint water, and distilling off 25 parts.]

THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 10. WHOLE No. 136

FRED'K A. CASTLE, M.D., - EDITOR
CHAS. RICE, PH.D., ASSOCIATE EDITOR.

PUBLISHED BY
WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

OCTOBER, 1885.

SUBSCRIPTION PRICE per year, \$1.50
SINGLE COPIES, 15

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

WE were lately present at a discussion of ethical matters relating to the medical and pharmaceutical professions, during which the question was raised, whether a physician is justified in encouraging the use of remedial agents or appliances which are protected by patents. Opinions on this subject appeared to be very far apart, but it was evidently the feeling of the majority that a strict interpretation of what might be called in this case the unwritten code of ethics militated against the use of such remedies. We took no part in the discussion, but believe that the disputants had not fully considered the subject in all its bearings; therefore, as we have certain decided views, we venture to lay them before our readers.

It is generally understood that a patent is equivalent to a monopoly in the manufacture, sale, or use of a certain invention for a limited number of years. The principal rea-

son why our government and those of other nations grant patents is that encouragement may thus be held out to inventive minds to bend their energies towards improving the condition of mankind directly or indirectly, for, in the end, even the most trivial invention—if it is really an improvement—has a bearing in this direction. Before patents, in the modern sense of the term, were thus granted, the advancement of the sciences, and particularly that of the arts, was very tardy, owing to the want of a stimulus in the shape of a tangible reward for energies, time, and perhaps money and health expended on some improvement. It is a matter of record that true progress in the arts, the sciences, and in public and private comfort, has only resulted in countries which possess liberal patent laws, while it is equally notorious that the countries which have not such laws are more or less backward in development and are dependent on the others. In a general way, therefore, it may be asserted that patents, if properly issued (that is, for real improvements) are justifiable, proper, and even highly advantageous.

As there is practically no limit to the number of things and improvements upon which patents may be granted, we shall confine ourselves here to a specific class of patents, namely, those applying to internal or external remedial agents.

Now, in examining whether the general assertion just enunciated is applicable also to the special class of substances last mentioned, it is of importance to take into consideration the condition of the person who seeks and obtains such a patent. For our present purpose, we may divide all patentees into two great classes, one comprising those who are directly and closely connected with the medical or pharmaceutical professions, or otherwise professionally engaged in ministering to the sick and infirm, and the other class comprising all other persons.

Regarding the first class, there is a very decided feeling among the best and most prominent members of it in this country, that it is an unjustifiable and unseemly act, on the part of a physician or pharmacist, to patent a substance or appliance primarily intended to relieve disease. This feeling is most certainly quite strong in this country, and, we may add, also in England, but is not equally strong on the continent of Europe, as will be conceded by those who are familiar with the current literature. We have not the slightest doubt that any member of the medical profession in good standing in this country, who should succeed in discovering a sovereign remedy, say for cholera, and should attempt to patent the same (or otherwise make an unseemly traffic in it) would be deemed unworthy to further associate with his former confrères. In other words, it is considered unbecoming in a physician to monopolize a remedy necessary for relieving disease, for the purpose of enriching himself. While this is the feeling among the medical profession, it cannot be said that an equally strong feeling exists among the members of the pharmaceutical profession. Perhaps we should have been more correct by saying that the relative number of pharmacists having an equally strong feeling on the subject is smaller than among the medical profession. This is, however, not at all unnatural, inasmuch as the pharmacist has to deal with numerous substances not necessarily indispensable for relieving disease and, further, since it is not his special province to originate and study out improved methods of treating disease. Nevertheless, it would be sophistry to exempt a pharmacist

laying a monopoly on some necessary remedy, from the strictures and blame which is supposed to attach to a physician guilty of like practices.

It should be borne in mind that our present argument does not deal with the question of the morality of secret nostras in the shape of *proprietary* medicines having copyrighted title. These stand on another, and, in our opinion, much more inglorious basis; their composition being kept secret, while patented articles have at least the redeeming feature that their manner of preparation or specific features are made accessible to anybody in the published patent-records.

Without enlarging on this portion of the subject any further, we bring forward our second assertion, namely, that all those whose profession has a direct bearing upon the relief of suffering humanity should be considered as having renounced the moral right to secure or control patents on any articles that are primarily used for remedial purposes.

Such ethical considerations, however, as should influence the professional physician or pharmacist need not be expected to have much influence upon those who stand foreign to these professions. There have been shining examples of unselfishness exhibited from time to time among this, by far the largest class of patentees. But these examples are few and far between. And, after all, we have no right to find fault with those who take advantage of the protection of the law to secure a monopoly. It is nothing more than human nature, and perfectly in accordance with the general object for which patent protection was established.

Having briefly considered the condition and obligations of those who seek and obtain patents, it now becomes necessary to examine the relation in which the great mass of those who are expected or supposed to use patented articles, stand to those who own the patents. It is chiefly this question which we desired to bring out more prominently, and upon which to express our views.

It is the prerogative of the physician to employ for the cure of disease any method of treatment which he conscientiously believes to be conducive to the benefit of his patient. But it is not only his prerogative, it is even his duty to do so, if he knows that favorable results may be expected from the use of some remedy or appliance, even though they be claimed by a particular sect as quasi-proprietary, or else be guarded by a patent. If the physician has the choice between a non-patented and a patented article, he will quite naturally prefer the former, provided it is equally serviceable. But if the latter answers the purpose better, he is perfectly justified in recommending and employing it. The onus of immorality attaching to such a patent belongs to the patentee exclusively, but not to the person who uses it or is compelled to use it in want of something equally good and unpatented.

In following this argument, it should always be remembered that a patent implies not merely a monopoly, but at the same time removes all secrecy from the invention. Every one, therefore, who uses a patented article or invention has full opportunity of examining its details and its adaptability to any special case. The reverse is the case with so-called proprietary medicines, the composition of which is kept secret, and which are copyrighted by title. It is hard to understand how any physician can persuade his conscience that he is justified in using such preparations—the composition of which is at the discretion and mercy of men seeking to make money—in the treatment of the sick.

From the above, it follows that a physician is perfectly justified in em-

playing an article patented by others, provided he considers it of special benefit to his patient. On the other hand, he is not justified in using proprietary "medicines," of unknown composition, the ingredients of which may at any time be altered by the maker without his knowledge. Incidentally, also, it follows that the whole business of manufacturing, selling, or using proprietary "medicines" is unjustifiable, wrong in principle, and indefensible as long as there is any secrecy maintained about their composition.

It is probably known to all who read this that *no product of nature*, whether existing as such ready formed in any of the three natural kingdoms, or artificially obtainable as a definite compound of constant composition and characteristic properties (such as many artificially prepared organic chemicals), is capable of being patented. Only the special *processes* by which such products are reached can be protected by a patent. If another inventor discovers an entirely different process leading to the same result, he is as much entitled to a patent as his predecessor. There are numerous indispensable articles used in medicine which have been at times, and are even now, partly hedged around by patents, but in almost all of these cases the patent does not amount to a monopoly, inasmuch as there are channels left open by which the same article may be procured without an embargo. Take the case of salicylic acid. This may be obtained perfectly pure from oil of wintergreen, and is in fact manufactured from this source for the market. There is no patent on this. But the process, discovered by Prof. Kolbe, which enabled the acid to be made at a low price on a very large scale is protected by a patent. The patented acid is much cheaper and equally pure as the natural. Would any one plead in favor of using the more expensive natural acid, merely because the artificial is patented? Many other such cases might be cited, but the argument in favor of the patented article would remain the same.

Let us put another case. Supposing a non-professional person should accidentally discover a protective or curative remedy for cholera. He would, from his unprofessional standpoint, be excusable for seeking and obtaining a patent for the same, but it would then become a question of public policy whether the people through their representatives should not purchase the patent and throw it open for public use. Such has been done repeatedly by different governments, the whole people being taxed, because benefited in its entirety.

The original discussion to which we alluded in the beginning of this paper, and which induced us to explain our views on the subject, arose from a difference of opinion, between several physicians, about the propriety of using the new antipyretic known as *antipyrin*, the process for preparing which is patented. Applying our mode of reasoning to this case, we come to the conclusion that there cannot be the slightest objection made to its use on that score. In the first place, it was patented probably more with the intention of securing its control in case it should be found to be a starting point for a new series of technically valuable compounds, than because it is valuable as a medicine. In the second place, its chemical composition and mode of preparation has been announced to the world through the patent publications. And in the third place, it is capable of relieving certain phenomena of disease more promptly, safely, and surely than any other substance known. Should some other investigator hit upon an entirely different method of preparation, the

latter could have the choice either of throwing open the right of manufacture to the world at large, or of protecting his new process, likewise, with a patent.

The Sixth International Pharmaceutical Congress convened at Brussels, on Monday, August 31st, at 2.30 P.M., in the grand saloon of the Palais des Academies, and was opened, on behalf of the king, by his representative, the minister of foreign affairs. The President of the Provisional Committee on Organization, having made an address recounting the manner in which the committee had endeavored to discharge its duties, the Congress proceeded to elect the honorary officers, and the president subsequently requested the foreign members present to select from among themselves vice-presidents, the list of whom was completed on the second day. After the secretary, Mr. Van de Vyvere, had made his report, Mr. Méhu, of Paris, moved that the Provisional Committee be made the executive body of the Congress, which motion was carried unanimously.

By Tuesday morning, four sections had been organized, each of which then appointed its officers and proceeded to the discussion of reports and papers, the subject matter of which was as follows:

First Section.—President, Mr. Verhassel. 1. Veterinary Pharmacy, report by Mr. Berquier. 2. The Necessity for an International Pharmacopoeia from a medical Point of View, by Dr. Quinlan. 3. Pharmaceutical Apprenticeship, papers from the Vienna Pharm. Soc., and from Mr. Patrouillard. 4. Pharmaceutical Assurance Societies, by Mr. Bertault.

Second Section.—President, Mr. Cornelis. 1. The conditions proper for the Supply of Compounded Medicines and the Repetition of Prescriptions, by Dr. Böttger. 2. Solubility of Biniode of Mercury in Fatty Menstrua, by Mr. Méhu. 3. Pharmaceutical Specialties, by Mr. Zanni.

Third Section.—President, Mr. Belval. 1. Danger attending the Use of Lead Pipes for Water Supply, by Mr. Hamon.

Fourth Section.—President, Mr. Van Bastelaer. 1. The Evils attending the immoderate Use of Morphia, and other Poisonous Alkaloids and Glucosides, and the Restrictions under which they should be supplied to the Public, by Mr. Madsen. 2. The relative Advantage to Pharmacists of preparing Medicines and Chemicals, or obtaining them from wholesale manufacturers, by Mr. Patrouillard.

The first general meeting was held on Tuesday, at 2 P.M., and the second general meeting at the same hour on Wednesday.

Further details of the meeting, as well as abstracts of the more interesting papers read, will be found in our next, when we shall have received our mail-reports.

In our last issue we announced, with profound regret, the decease of our friend and colleague, HENRY B. PARSONS. His death is acknowledged by all who knew him to be a sad and serious loss to the profession. Being by nature of serious though cheerful disposition, studious habits, and a persevering and firm character, he gained the esteem, respect, and friendship of all who had the opportunity of becoming

acquainted with him. He was born November 20th, 1855, at Sivas, Asia Minor, where his father, Mr. Benjamin Parsons, was then engaged in missionary work. When four years of age, his parents returned to the United States. After he had passed through a thorough course of preliminary education, and showing a special fondness for chemistry, he entered the School of Pharmacy of the University of Michigan in 1874. After graduating, he remained at Ann Arbor for several years as assistant to the professor, when he obtained a position as special assistant in the chemical division of the Department of Agriculture at Washington. During the latter portion of his connection with the University of Michigan, and for some time after his removal to Washington, he was connected with the editorial staff of this journal, taking charge of the department of prize analyses for students. A few years afterwards, he accepted a call to the house of W. H. Schieffelin & Co., of New York, as chief of their manufacturing laboratory. In his connection with the Committee for Revision and Publication of the Pharmacopoeia, he manifested, in a special degree, his capacity for thoroughly scientific work. In May, 1884, however, serious symptoms of lung disease manifested themselves, which compelled him to change his employment. At this time he accepted the editorship of the *Druggists' Circular*, and had hopes of eventually recovering his health by care and judicious treatment. It was, however, ordained otherwise. Very serious hemorrhages having, at several times, shown that the progress of the disease had not been checked, he finally decided, as a last resort, to seek a more congenial climate, and removed to Tucson, Arizona. It was, however, too late. On Friday, August 21st, 1885, he passed away. His many personal friends, and his associates in the College of Pharmacy and in various other societies, will always cherish his memory.

AMONG the resolutions adopted at the recent meeting of the American Retail Druggists' Association was one providing for a delegation to the next meeting of the wholesalers, which is instructed to express the sense of the former association, "that wholesale dealers should not sell goods at wholesale prices to physicians or general dealers." It seems to us that the question would have been better put if it had been made to read *retail* in place of *sell*.

There are a large number of physicians and general dealers who are obliged, by the circumstances of their surroundings, to deal in drugs and medicines. Every community does not have a retail druggist; and if physicians in such localities did not dispense, or the general dealer keep the remedies in common use, the interests of the public would suffer. If the words—*residing in the neighborhood of a retail druggist*—had been added, there would have been less occasion for criticism. As it stands, the action contemplated by the resolution is not practicable.

WE observe that the Association has, in a manner, adopted the plan of State representation advocated by us in a recent issue, but we believe that the Association would accomplish its work much more thoroughly if it would limit its membership to delegates. Each State association elect-

ing a Committee on Trade Interests, could empower the committee to represent it in a national convention. Such a committee would have all the opportunities offered by its State organization to become familiar with the questions affecting the drug trade of its section of the country, and each State sending delegates should contribute its proportion of the expense incurred by the convention, as well as undertake to disseminate such information concerning trade matters as the convention may decide to be desirable.

It is a waste of energy and time for an organization like the one now in existence to undertake to handle questions of trade. Its meetings are too far apart to permit of efficient action; the members of its executive committee too widely located to permit of frequent conference, and it fails to gain the powerful aid which it would derive from strong local organizations represented by able delegates.

We repeat what we have before expressed, that, in our opinion, the present need of the retail trade is *local organization*. When the pharmacists of any considerable section of country have agreed upon measures calculated for their benefit, then, and then only, can we hope for concerted action with pharmacists in other States.

ONE of the most lamentable occurrences that has been known in the practice of pharmacy was the recent mistake by a well-known apothecary in Hoboken, whereby two young ladies lost their lives. Mr. Am Ende was well known, not only as a competent pharmacist in respect of his professional ability, but he was one of such painstaking character as would have been thought least likely to dispense morphine instead of quinine; but, in spite of all that, he did so, and those who took it died.

Here is something which cannot be guarded against by requirements of preliminary education, laboratory practice, State examining-boards, pharmaceutical literature, or any of the measures calculated to elevate the intellectual status of the profession. The best-educated pharmacist in the country may have an indigestion, an attack of malarial poisoning, or lose a night's rest, or some annoyance connected with his business or family affairs may distract his mind, and unconsciously he may be doing his work automatically when it should receive his undivided attention, and then the accident happens.

It seems to be a matter of pride, more than anything else, which prevents some men from adopting extraordinary precautions against mistakes in dispensing; and, in spite of the fact that numerous methods have been proposed for guarding against accidents of this character, the number of pharmacist who adopt them are relatively few. The sad results which followed Am Ende's absence of mind should not be disregarded, and no pains or expense should be spared to guard against a similar experience.

It has been lately suggested that sulphate of morphine should be colored with some substance therapeutically inert, as a means for its identification, and to destroy its resemblance to sulphate of quinine. This has been objected to, on the ground that it would increase the difficulty of chemical tests. Still another plan consists in dispensing sulphate of morphine from the ½-oz. package in which it is purchased, while quinine is kept either in the tin can or in a shelf-bottle. Another method has occurred to us

which we think practicable and calculated to diminish the chances of mistaking one substance for the other, without the introduction of a foreign element, and that is compression of the morphine salt into a square or oblong disc, by means of sufficient pressure to make it firm and capable of being handled and transported without loss of form or substance. Each one of these cakes or lamellæ might, as a matter of convenience, contain one-eighth of an ounce, be wrapped in tissue-paper, and then in some wrapper that would exclude moisture and gases, and eight of these might then be packed in a tin box of suitable proportions. The difference between the light, flocculent crystals of sulphate of quinine and the amorphous and somewhat granular fragments of the sulphate of morphine thus treated could not fail to be apparent to any one not in a state of catalepsy, and at the same time the cohesion of the particles need not be so great as to interfere with ready trituration or solution. It could quite as readily be made into powders or pills, and it would resemble in its perfect shape or in its granular particles no other drug in common use.

By a simple contrivance, the name of the manufacturer and the name of the article could be imprinted upon its surface, as is done in the case of many varieties of lozenges and of toilet soap, so that a person who had never seen such a thing before, and never heard of such a method of putting up poisonous salts, would recognize at once the nature of the substance.

Among the features which would recommend this plan to the manufacturer are the saving of bulk, and in the cost of containers, as well as the advertisement which each individual tablet might bear.

THE publishers of the AMERICAN DRUGGIST have decided to make the price of subscription one dollar and a half in place of one dollar after the completion of this volume. The change in price will therefore apply to the volume commencing with January, 1886. It is hoped, in view of the character maintained by the Journal during the past years of its existence and the inadequately low price at which it is now issued, that this slight increase will meet the approbation of all who now favor it with their patronage.

The difficulty which formerly attended the transmission of fractional portions of one dollar by mail has now been obviated, in great measure, by the introduction of postal notes for sums less than five dollars at a cost of but three cents each.

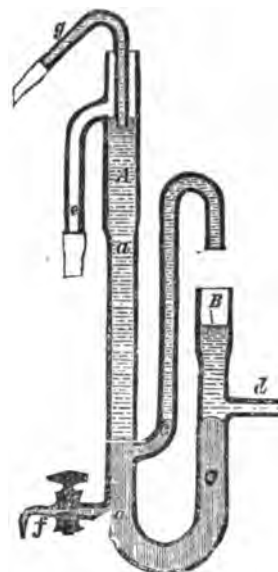
THE Governor of Massachusetts has nominated for the Board of Registration in Pharmacy, established by the Legislature at its last session: Samuel A. D. Sheppard, of Newton (5 years); Henry W. Whitney, of Lawrence (4 years); Freeman H. Butler, of Lowell (3 years); John H. Manning, of Pittsfield (2 years); Henry A. Estabrooke, of Fitchburg (1 year).

CONSTANT LEVEL REGULATOR FOR WATER-BATHS.

THE apparatus here described forms the subject of German Patent No. 29,305 (Feb. 5th, 1884).

The water-bath is connected with the apparatus by the branch *d*. *B* is an open branch, in which the water rises to the same level as it is in the water-bath. When preparing the apparatus for use, a quantity of mercury suffi-

cient to rise a short distance in the limb *c* is poured into the lower bend. The small tube *g* is connected with the water-supply, and the latter turned on so that enough water flows into *A* to keep it full, while the excess may run off through *e*. After the water-bath has been filled to the desired height, the faucet at *f* is cautiously opened, until a little water can make its way over into the branch *c*, whence it will fall, either in drops or in a fine stream (as may be desired) into the open tube *B* communicating with the wa-



Constant level apparatus.

ter-bath. As the water in the latter evaporates, the column of water over the mercury in the tube *c* becomes shorter, and therefore lighter. As a consequence, the column of mercury in this limb will rise a trifle, and the opposite column will be a trifle depressed, thus admitting a more copious supply of water through the limb *c*. When the water in the water-bath is evaporated very rapidly, it may at first fall by 1 or 1½ centimeters, but afterwards remains quite constant at the same level.

PILLS.*

PILLS, *pilulæ*, are small medicinal pellets which are of harder consistency than boli, and are swallowed as dispensed. Remedies of a disagreeable taste or smell are usually dispensed in this form. The ingredients of pills may be of as great diversity as their nature—roots, gums, resins, metallic substances, alkaloids, salts, juices, oils, balsams, extracts, etc.

Among the requisites of well-prepared pills are: that they be not too soft, nor too adhesive, so as neither to stick together, nor to form into a doughy mass, nor to flatten out. Moreover, they should be smooth and round, of equal size, and each contain an equal quantity of active substance. The size of pills is indicated by weight. As a general rule, physicians prefer to prescribe pills of from 0.1 to 0.15 Gm. (1½ to 2½ grs.), as smaller ones have a tendency to adhere to the pharyngeal mucous membrane, while those of a larger size cannot be swallowed by many patients. When the Nuremberg medicinal weight was still in use, the ordinary weight of a pill was 2 grains (= 0.125 gr.). This gave a pill that could be conveniently seized by the fingers and easily swallowed. As 0.125 gr. is accepted as the standard weight of pills, the compounder should

*The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

keep close to this weight (0.12 to 0.13 Gm. or about 2 grains).

The preparation of good pills, in many instances, is a work of great labor and even difficulty, requiring extreme attention and much practical judgment and skill on part of the compounder. It cannot be expected that the physician can write a formula extemporaneously that will give a good pill mass in every case, for the drugs in all pharmacies vary in consistence. In fact, the physician is justified in trusting to the caution and skill of the compounder, and all the more so as the latter is allowed to make use of such additional ingredients as are adapted for making a good mass. Sometimes, perhaps, a mass is prescribed from which no pill can be made, but as nobody is obliged to do impossibilities, it cannot be expected of the apothecary either.

If, owing to time and distance, the prescription cannot be sent back with the necessary queries for the physician's revision, the compounder must use his own judgment in changing the formula in the mass, as his conscience and prudence command.

THE IMPLEMENTS used in making pills are: Pill mortars, spatulæ for pills or extracts, pill machines, and finishers.

PILL MORTARS are made of cast iron,

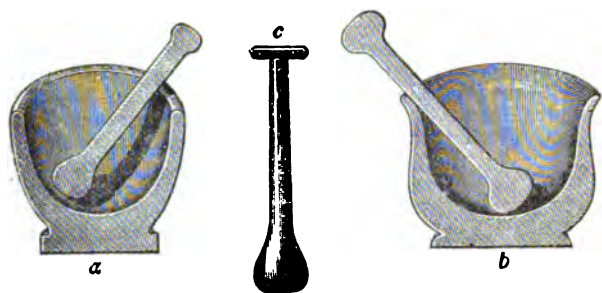
try, the so-called Wedgewood mortars are preferred. They are certainly more durable and much better than porcelain ones.]

The best SPATULÆ are the so-called extract spatulæ of iron or steel. As they are rather sharp in front, they are very handy for removing the mass from the mortar, and cleaning off any of the mass that adheres to the pestle. These spatulæ are 5, 6½, and 7 inches in length, and ⅜, ½, and ⅝ inch in width; the thinner or sharper end is somewhat elastic.

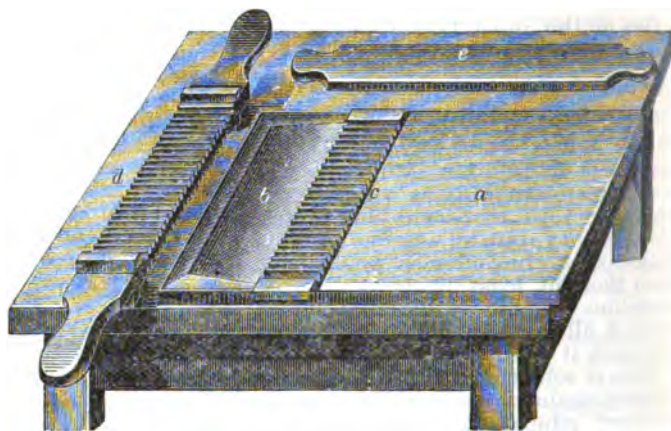
[Spatulas used in this country are usually of a different shape. We have inserted the above description and cuts rather for the purpose of showing what implements are used abroad, than with a view of recommending them in preference of our own. The same remark applies to some other forms of apparatus.] The spatula knives are not so desirable, because the wooden or horn handle is generally lost before the blade becomes useless. Iron spatulæ are not suitable for pill-masses that have to be pounded in porcelain mortars; horn or wooden ones of the shape of the extract spatula, but somewhat thicker and stronger, are used instead. A kind of spatula which is still kept in many pharmacies, and which has a long handle spread out at the end in spade-shape

(c and d), each of which has twenty-five or thirty half cylindrical grooves. Each groove runs out with that along-side into a sharp edge. One part (c) is either securely fastened in a board-like frame (a b), or is loose and placed in a corresponding slit of the frame. The other part (d) has handles at the ends, and forms, when laid on the other part of the machine, thirty or twenty-five perfectly equal channels. The division of the pill mass, and the rounding of it are performed between these two pieces. The channels have varying sizes, so that 0.6, 0.12, and 0.18 Gm. (or as formerly 1, 2, and 3 grain) pills can be cut off and rounded, and the machine is designated as of one or more grain pills. When the two parts are of metal, they have grooves on both sides so that pills of two different sizes may be made. The machine represented in the following engraving is of this kind. The frame is a smooth board of hard wood, may be an inch or somewhat more in thickness, and furnished in front with a border along its width and underneath, so as to make the frame firm when laid against the table edge. The frame has a depression (b) behind the bed of the inserted part, which sometimes has a flat outlet at one end, to pour out the pills more readily.

The roller (e) is from ten inches to a



a, Section of pill mortar with straight edge; b, with curved rim; c, pestle with handle.



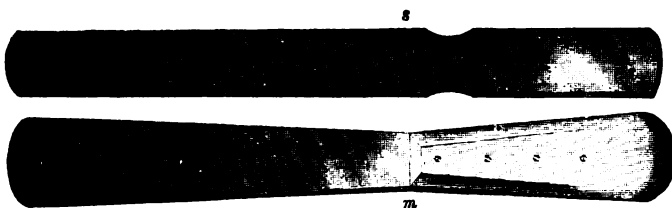
Pill-Machine.

steel, or porcelain. Masses containing metallic salts that are decomposed by iron, and those with acid ingredients, are crushed in porcelain mortars, glazed inside.

The shape of a pill mortar should be such as to facilitate, as much as possible, the mixing and kneading of the mass. The best shape for the inner surface is like that of a hollow half-sphere; that of the pestle must be adapted to it, but so that the rounded bottom is somewhat flattened off. Pill mortars with a curved rim are open to the objection that the rim is liable to be coated with the extract or mass on the pestle, and thus soil the fingers.

The pestle should be at least 2½ times as long as the depth of the mortar; the pestle with a round, blunted head is very convenient, but many prefer to have a handle; the former is more easily manipulated, however, as the rounded head offers no resistance to the pestle revolving in the hand. A pharmacy is usually provided with a large and a small pill mortar; the former has a perpendicular depth of about 3½ inches; the latter one of only 2 inches.

The porcelain mortars have the same shape as the iron, but are glazed on the inside. They are used when the ingredients of the pills are acids, acid substances, acid salts, iodine, bromine, corrosive sublimate, iodides of mercury (mercuric and mercurous), and mercurial combinations in general, nitrate of silver, chloride of iron, and salts of iron or of other metals generally. [In England and in this coun-



Spatula Knives.

is certainly very awkward to handle, and very unsuitable.

POUNDING THE PILL MASS.—The dry, powdered materials are first well mixed with honey, water, tincture, etc., which are to form the mass by being worked up, and kneaded with the powder mixture. If these ingredients are used in proper proportions, a kneadable mass will soon be formed by the pestle, which mass will not crumble, nor adhere to the pestle or mortar. When the mass has these qualities it may be considered as fit for making pills on the machine. Of course, all masses do not require these qualities to the fullest extent, but the making of consistent or crumbly pills very often depends on thorough kneading with the pestle. **PILL MACHINES** are made of metal, horn, boxwood, or glass. Iron and steel are the most generally used. Brass should not be employed. Wood, horn, or glass machines are only used for making pills when metal mortars are objectionable, as in the compounding of pills with ingredients of the mercurial preparations, and salts of silver, lead, copper, tannic compounds, etc. The pill machine consists of two rail-shaped pieces

foot in length and two-tenths of an inch in thickness, and is used for rolling the mass on the smooth front part of the frame.

The length of the grooves for making thirty one-grain pills is 5½ inches, and for two-grain pills 6.69 inches.

Some practice is required to cut and round pills properly. The portion to make, for instance, thirty pills, is taken and weighed from the mass. After this part has been rolled with the palm of the hand, and then rolled out with the roll-board to a uniform string of thirty pills, it is put into the machine part in the frame, the machine portion with the handles on it, and the latter moved to and fro until the pills are rounded by the motion of the machine part in the depression of the frame.

Pills that are not perfectly formed are rounded off with the fingers. This is, of course, necessary when the size of the pills is not equal to that of the grooves.

Of course, it must be acknowledged that rounding pills with the fingers is not exactly what may be called nice. Rounding pills with the fingers is only admissible when no other method is available, and when the pill-mass possesses such a consistence that it crumbles in the finisher, hereafter to be described. Such cases, however, are rare, as the good preparation of the pill-mass depends on the compounds.

(To be continued.)

The Pharmacopoeial Application of Kerner's Test to Quinine and its Salts.

BY FREDERICK B. POWER AND HENRY G. RUENZEL.*

THE test proposed by Kerner for the determination of the purity of sulphate of quinine is based, as is well known, upon the difference in degree of solubility of the neutral sulphates of the cinchona alkaloids in water, and of the free bases in ammonia water. The test as formulated by Kerner[†] was applied solely to the ordinary so-called neutral sulphate of quinine, and in this form has now been adopted by the United States, German, and French pharmacopoeias. It was plausible, however, to suppose that the same test may be applied, with an equal degree of accuracy, to the other salts of quinine, after first converting them into the neutral sulphate, and such an application of the test had been made by both the United States and German pharmacopoeias, although the means by which this is attained differs somewhat in the two latter standards.

Shortly after the appearance of the new United States Pharmacopoeia, one of us had occasion to apply this test in the examination of pure quinine, and observed at that time an apparent error in the text of the pharmacopoeia, since by the most careful manipulation the required five per cent centimeters of filtrate could never be obtained without the use of more water than is officially directed to be employed.

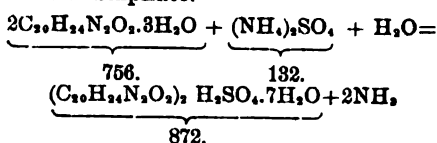
It was in consideration of this fact that the following experiments have been made by Mr. Henry G. Ruenzel, and extended to all the official salts of quinine where this test is applied. It was also considered of interest in each case to determine the amount of water of crystallization present in the alkaloid or salts employed, as this will have a slight, although probably not very appreciable, influence upon the amount of filtrate obtainable.

Quinine, $C_{20}H_{24}N_2O_8 \cdot 3H_2O$.

Water of crystallization.—0.5826 gramme of quinine lost upon drying at $115^\circ C$. 0.0362 gramme of water, corresponding to 6.21 per cent, or a little more than 1 molecule. $C_{20}H_{24}N_2O_8 + H_2O$ represents 5.26 per cent of water, while 3 molecules H_2O requires 14.28 per cent.

Kerner's test.—The U. S. P. states that "if 1 gramme of quinine be mixed, in a mortar, with 0.5 gramme of sulphate of ammonium and 5 C.c. of distilled water, the mixture thoroughly dried on a water-bath, the residue (which should be neutral to test paper) agitated with 10 C.c. of distilled water, this mixture macerated at $15^\circ C$. for half an hour, then filtered through a small filter, 5 C.c. of the filtrate taken," etc.

It was found by repeated experiments and with every precaution to avoid loss, such as the use of a filter of just sufficient size, that in following the official directions only 3 cubic centimeters of filtrate were obtained, and in order to obtain 5 cubic centimeters, the minimum amount of water necessary to be added to the dried mixture was 13.5 cubic centimeters. The use of the sulphate of ammonium, as will readily be seen, is to effect the conversion of the free alkaloid into neutral sulphate.

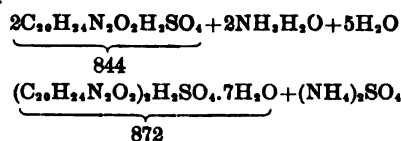


It is doubtless through the mechanical absorption or retention of water by the excess of ammonium sulphate employed (the amount being about three times that theoretically required) as also in the increased amount of quinine sulphate obtained (1 gramme of quinine affording about 1.15 gramme of neutral sulphate), that the deficiency in the volume of filtrate in this case is due. This deficiency, it is true, may readily be made up by pouring water upon the contents of the filter until sufficient has passed through to form the required volume, and this course would doubtless be pursued by the majority of those who have occasion to apply the test. It is not believed, however, that the purpose of the test, to obtain a saturated aqueous solution of quinine sulphate, is thereby as accurately fulfilled as when the mixture is originally digested with the proper quantity of water, which, in this instance, might practically be stated to be fifteen cubic centimeters. To what extent the presence of the excess of ammonium sulphate in this instance, or the sodium bromide or chloride formed in the following tests, may influence the amount of quinine sulphate or other alkaloids dissolved by the water, or whether any such influence is exerted at all, is a question which might possibly prove worthy of further investigation.*

Quinine Bisulphate, $C_{20}H_{24}N_2O_8 \cdot H_2SO_4 \cdot 7H_2O$.

Water of crystallization.—1 gramme of the salt lost upon drying at $100^\circ C$. 0.127 gramme of water, corresponding to 14.26 per cent, or about 4 molecules. A salt with 4 molecules requires 14.57 per cent, and with 7 molecules 22.99 per cent of water.

Kerner's test.—With this salt the Pharmacopoeia directs the bisulphate to be converted into neutral sulphate by the cautious addition of ammonia water to the mixture, the use of 10 cubic centimeters of water, and afterwards proceeding as directed under quinine.



In performing this test a small capsule was used, which admits of transferring the mixture to a filter with less loss than from a tube or flask. Instead of the required 5 cubic centimeters of filtrate, however, only 2 cubic centimeters were obtained. After several experiments, the bisulphate was dissolved in 10 cubic centimeters of water, the solution carefully neutralized by ammonia water, and afterwards 8 cubic centimeters of water added. By thus employing altogether 18 cubic centimeters of water, instead of 10 as directed by the United States Pharmacopoeia, a little over 5 cubic centimeters of filtrate were obtained, so that practically 20 cubic centimeters of water may be directed to be employed. In this case, as with the pure quinine, considerable water is evidently retained by the ammonium sulphate, while the amount

* Some interesting observations relating to this question by Jassoy and Schlickum (Pharm. Centralhalle, No. 11, pp. 115-118, 1885, abstracted in Archiv der Pharm., April, 1885, pp. 271-272), have recently come to our notice. The experiments of these investigators have conclusively proved: 1. That the presence of sodium sulphate greatly diminishes the solubility of quinine sulphate, and, indeed, in proportion to its amount. 2. That the presence of sodium chloride increases the solubility of quinine sulphate, in consequence of the formation of quinine hydrochlorate. 3. That by the simultaneous presence of sodium sulphate and sodium chloride, the solubility of quinine sulphate depends entirely upon the predominating proportionate relation of the two salts, and in such a manner that the solubility is nearly the same as in pure water where the sodium sulphate is in such slight excess as by the employment of one gramme sodium sulphate for two grammes of quinine hydrochlorate; that, on the contrary, the solubility is somewhat diminished by the employment of equal weights of the two salts.

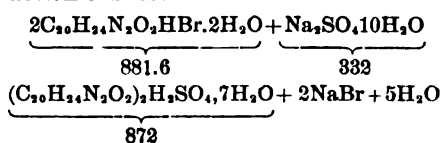
of quinine sulphate from 1 gramme of anhydrous bisulphate corresponds to but 1.03 gramme.

In the Pharm. Germanica, 2 grammes of the bisulphate are directed to be dried with 1 gramme of ammonia water, and the residue is then tested as with neutral sulphate of quinine. In the French Codex, Kerner's test is applied only to the ordinary neutral sulphate of quinine, although the pure alkaloid, the bisulphate, hydrobromate, salicylate, and valerianate have a place in that standard.

Quinine Hydrobromate, $C_{20}H_{24}N_2O_8 \cdot HBr \cdot 2H_2O$.

Water of crystallization.—0.637 gramme of the salt lost upon drying at $115^\circ C$. 0.0334 gramme of water, corresponding to 5.53 per cent, or a little more than 1 molecule, which requires 4.25 per cent. The official salt requires 8.16 per cent of water.

Kerner's test.—With this salt the Pharmacopoeia directs the hydrobromate to be converted into neutral sulphate by means of crystallized sodium sulphate, whereby the following reaction ensues:

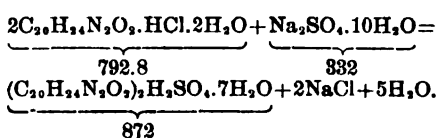


In following strictly the official directions for testing this salt, by dissolving 1.5 gramme in 15 cubic centimeters of hot distilled water, etc., between 2 and 3 cubic centimeters of filtrate were obtained, instead of 5 cubic centimeters. After several experiments, the minimum amount of water found to be necessary was 26 cubic centimeters, in order to obtain, by direct filtration of the original mixture, the required 5 cubic centimeters of liquid. The amount of water directed to be employed for dissolving the salt should therefore be practically 30, instead of 15, cubic centimeters, as the amount of neutral sulphate of quinine formed by the reaction, 1.47 gramme, is largely in excess of that required to form a saturated solution.

Quinine Hydrochlorate, $C_{20}H_{24}N_2O_8 \cdot HCl \cdot 2H_2O$.

Water of crystallization.—0.5511 gramme of the salt lost upon drying at $116^\circ C$. 0.0431 gramme of water, corresponding to 7.82 per cent, or nearly 2 molecules. A salt with 1 molecule of water requires 4.75 per cent, with 2 molecules 9.08 per cent.

Kerner's test.—The application of the test to this salt is perfectly analogous to that of the hydrobromate, with the exception that the pharmacopoeia directs 0.75 gramme of crystallized sodium sulphate, instead of 0.6 gramme as with the preceding salt, in view of the lower molecular weight of the hydrochlorate.



The use of 15 cubic centimeters of water, as directed for dissolving the salt, afforded in this instance but about 1 cubic centimeter of filtrate, instead of the required 5 cubic centimeters. To obtain the latter amount it was found necessary to employ 24 cubic centimeters of water, so that in this instance, as with the hydrobromate, the amount required might practically be stated as 30, instead of 15 cubic centimeters. The amount of neutral sulphate of quinine corresponding to 1.5 gramme of hydrochlorate is 1.65 gramme.

The Pharm. Germanica, in the application of the test to this salt, directs

* From the Contributions from the Department of Pharmacy of the University of Wisconsin. No. 1, 8vo., Madison, 1885.

† Zeitschrift für analyt. Chemie, I, p. 150, 1862; Amer. Jour. Pharm. xxxiv, p. 147, 1862; Archiv der Pharm., 1880, No. 6, and Proc. Amer. Pharm. Assoc., 1881, p. 329.

that 2 grammes of the hydrochlorate should be evaporated with 1 gramme of sodium sulphate and 20 grammes of water to dryness, the residue extracted by boiling with 12 grammes of alcohol, and the filtrate evaporated. The sulphate of quinine so obtained is then tested in the usual manner. It will be seen that by the latter method the sodium chloride is excluded from the liquid ultimately tested, which will contain only the pure quinine salt.*

Quinine Sulphate, $(C_{20}H_{24}N_2O_8)_2H_2SO_4 \cdot 7H_2O$.

With this salt the Pharmacopœia has adopted the original test of Dr. Kerner, and no alteration or modification of the text is therefore required for its successful application in accordance with the provisions of its author.

In conclusion, it may be repeated that the increased amount of water suggested to be used in the application of the foregoing tests is such as was found necessary by mixing it directly with the quinine salt, and not by making up the deficiency by additions to the mixture on the filter. In the latter case, a somewhat smaller amount is required, but, as previously stated, the purpose of the test is not as accurately accomplished.

"Rackarock."

THIS is a comparatively new explosive compound, which is manufactured by the Rendrock Powder Company of New York, and was brought to Gen. Abbott's notice in the winter of 1882, by one of the manufacturers. It consists of a solid, composed mainly of potassium chlorate, in fine powder, given a reddish tint by some coloring matter, and of an oily liquid, having the strong, bitter-almond smell characteristic of nitro-benzol. These compounds, neither of which is explosive by itself, are combined before use by immersing the solid in the liquid for a few seconds, until an increase in weight of about one-third is effected by absorption. The solid is supplied in the form of loosely-packed cartridges, of different sizes, put up in bags closed at each end. The combination of the ingredients is effected by means of an open basket of wire to receive the cartridges, which is suspended from a spring balance, and dipped in a galvanized iron pail containing the fluid. A little attention to the time of immersion renders the absorption fairly uniform. The explosive, when prepared in this manner, is a compact red solid, having a specific gravity of about 1.7. It decrepitates with difficulty when hammered on an anvil, but hardly ignites on wood. A fuse containing 24 grains of fulminating mercury fails to explode a cartridge unconfined or loosely confined. Even if it be compacted in an auger-hole in a log and tamped with mud, the explosion is only partial. A cartridge struck by a bullet from a Springfield rifle flashes, but does not detonate. Ordinary friction seems to have little tendency to cause explosion. These facts show it to be quite safe to handle even when ready for use, and it has

given excellent results in rock-blasting under General Newton, at Flood Rock, in the East River channel, near this city. Its peculiar chemical composition gives rackarock the interest of novelty among modern high explosives, and it has accordingly been tested with special care to discover the intensity of action of which it is capable when fired under water. Two fluids were supplied for the trials, the usual one consisting essentially of nitro-benzol; and the other of a special preparation consisting of the same saturated with picric acid (12 to 16 per cent, according to the quality of the solvent). The explosive prepared by absorbing these fluids by the solid are designated as "rackarock" and "rackarock special."

According to General Abbot, rackarock possesses the merits of high intensity of action, unusual density, absolute safety in handling and storage (components unmixed), and little cost; on the other hand, under the conditions of my tests, an exceptionally strong detonating primer is essential to develop its full power. Experiment alone can determine whether this defect be equally marked when the charges are confined in drill-holes in solid rock.—PROF. CHAS. E. MUNROE in *Proc. U. S. Naval Inst.*

[NOTE.—We are lately informed that this explosive is now being inserted in the drill-holes which have been made under Flood Rock, and which are soon to be exploded with the purpose of clearing away about seven acres of this obstacle to navigation.—ED. AM. DRUGGIST.]



HOT VACUUM-EXSICCATOR.

It is often desirable to hasten the evaporation of liquids, for the purpose of weighing the residue, without raising the temperature. In such cases the vessel containing the liquid may be placed under bell-glass connected with the vacuum pump. Volatile liquids are thereby much more rapidly evaporated, but watery liquids still take a long time to dry up. The operation may be hastened by a moderate heat, which, according to Rich. Anschütz and Aug. Kekulé, is best accomplished by a lead pipe entering through a hole in the stopper, forming a flat coil in the interior, and passing out through another hole in the stopper. The capsule containing the liquid to be evaporated is set upon the coil, which is made more solid by being covered above and below with nickel-plated wire gauze. The glass tube, also connected with the stopper, leads to the manometer and vacuum or filter pump. When the latter has been started and a vacuum has been established, a suitable hot liquid (hot water, etc.) is made to circulate through the lead tube, and the heat thus communicated to the solution will cause the latter to evaporate much more rapidly.—*Liebig's Annalen*, 228, 305.

Solubility of Official Chemicals in Water and Alcohol.

THE discordant statements as to the solubility of many chemical and other substances in the different pharmacopœias induced Prof. Fred. P. Power, of the Department of Pharmacy of the University of Wisconsin, to have the solubility of a number of them carefully examined. The experiments were made under his direction by Messrs. F. A. Scheuber, O. A. Kropf, and E. Naffz, and the results are given in the following table,* where the column headed S. K. N. refers to the three gentlemen just named.

One part of substance is soluble in 15° C. in the following parts of solvent.

	ALCOHOL.			
	U. S. Pharm.	Pharm. Germanica.	Pharm. Française.	S. K. N.
	Text.	Table.	Table.	
	15.	30.	30.	21.55
Acidum Boricum.....	25.	30.	30.	21.55
Acidum Carbolicum.....	20.	30.	30.	0.74
Acidum Citricum.....	0.75	1.	1.	0.74
Acidum Salicylicum.....	400.	600.	600.	2.31
Acidum Tartaricum.....	6.	6.	6.	1.97
Alumen.....	10.5	12.	12.	1.97
Ant. et Potass. Tart.....	17.	30.	30.	19.54
Argent. Chlor. Corros.....	16.	30.	30.	19.54
Hydraz. Acetas.....	1.8	30.	30.	2.08
Plumbi Acetas.....	123.	30.	30.	4.32
Potass. et Sodii Tartras.....	20.	30.	30.	11.73
Potass. Iodidum.....	0.8	30.	30.	11.73
Potass. Permanganas.....	30.	30.	30.	11.73
Potass. Sulphas.....	9.	30.	30.	11.73
Saccharum Lactis.....	0.7	30.	30.	11.73
Sodii Boras.....	16.	30.	30.	11.73
Sodii Phosphas.....	6.8	30.	30.	11.73
Sodii Sulphas.....	2.8	30.	30.	11.73
Zinci Sulphas.....	0.6	30.	30.	11.73

Tin Deposits of New South Wales.

THE tin deposits of New South Wales are estimated by the colonial geologist to cover an area of 5,440,000 acres, but the area is probably much greater than that, as new finds of tin are being reported every day. Both mine and stream tin are found in localities hitherto unlooked for, and, besides, very few of the lodes have been worked at all, the great bulk of the tin being the produce of the alluvial mines. According to Mr. Henry Woods, the under secretary of mines for this colony, the lodes that have been opened at Tingha, Elsmore, Newstead, and the Gulf of Gingellio, New South Wales, occur chiefly in euritic and micaceous granites. Gold, wolfram, metallic bismuth, and carbonate and sulphide of bismuth are occasionally found with the tin ore, the sulphide of tin occurring very rarely. The concretionary variety of tin oxide called toadseye is found in the Plio-

* Taken from the original paper in the *Contributions from the Department of Pharmacy of the University of Wisconsin*, No. 1, 8vo, Madison, 1885.

* According to the report of the Pharmacopœia Commission of the German Pharmaceutical Society (*Archiv der Pharm.* 1885, p. 141), the above method of the Pharm. Germanica has been found impracticable, since an inverse decomposition of that first effected subsequently ensues, and the filtrate will therefore contain the hydrochlorate instead of sulphate of quinine. The method of manipulation adopted by the U. S. Pharmacopœia was consequently suggested, with the use of 2 grammes of sodium sulphate for 2 grammes of quinine hydrochlorate. This requires, however, to be modified by the reduction of the amount of sodium sulphate to 1 gramme, in accordance with the observations of Jassoy and Schlickum. There is still no consideration taken of the insufficiency of liquid in order to obtain the required 5 cubic centimeters of filtrate, nor is it decided that the modification suggested may prove the most expedient for ultimate adoption.

cene gold drifts at Grenfell and on the Grampian Hills, New South Wales.

Professor Liversedge, F.R.S., of the University of Sydney, to whom I am indebted principally for the material of this report, mentions, as an interesting fact, that all the minerals found associated with tin stone in England, Germany, France, Russia, and the United States are combined with this mineral in New South Wales. The matrix of the tin stone of this colony is sometimes composed solely of topaz. Malachite, copper and iron pyrites, garnets, and schorl crystals are often associated with the ore. Rolled wood tin, which is the same as the toadseye, except that the pebbles are much larger, is found at Abington and other places. At Mudgee and Bathurst diamonds are not unfrequently mixed with this variety.

There are two distinct drifts of alluvial tin in New South Wales, the older and the newer. The former are more compact and are often cemented together into a hard conglomerate. The stone is rounded and much water-worn. In the newer drifts the metal is very bright and has undergone little attrition. Some of the fragments weigh many pounds. The richest tin mines in the colony are located on Vegetable Creek, in New England district, about 30 miles from Glen Innes and 380 from Sydney. New England lies in the northeastern part of the colony, and has an area of 13,100 square miles. It forms an immense table-land, at an elevation of 3,000 feet above the sea. The climate is mild and genial, although in the winter frost, snow, and sleet occur. The population is about 17,000. A railway is in the course of construction to the Queensland border, which will bisect the district.

The products of New England are shipped to Sydney either by way of Grafton or Brisbane. The railway between Newcastle and Glen Innes is now completed, and much of the produce will probably reach here by that route. Tin ore is very abundant in Queensland, and it is thought that the fields become richer as they advance northward. In both colonies the ore occurs in the granite formation of the great dividing chain of mountains that stretches throughout the whole length of the eastern and northeastern coast of Australia. This great dividing chain forms the chief watershed of the country.

Tin is believed to be more completely associated with the older forms of rock than any other metal to any series of rocks. Granite usually consists of very old rock, but it must be borne in mind that there are several kinds of granite. First, there is the Paleozoic; then there is the Mesozoic or Secondary, and the Cenozoic or Tertiary. Granite is a compound rock, consisting of quartz, feldspar, and mica.

Tin is supposed to have been very finely disseminated in the shale of which granite is formed, and under the effects of heat, pressure, and water, it has been forced, by a process of segregation, to combine with oxygen gas, and thereby formed the oxide of tin. The Australian tin fields differ in some respects from those of Perak. For instance, the ore in the latter country is usually found in the granite formations, overlaid with lime and sandstone, whereas in Australia no tin has been discovered under similar conditions. At first it was thought that the tin ore in New England district was confined to existing shallow streams, and that it was useless to look for it at any considerable distance below the surface. It has since been discovered at various depths from a few inches to 250 feet.

The first deep-stream tin found at Vegetable Creek was in 1873. The

lead was traced along a distance of from 400 to 500 yards, and at a depth of 50 feet very heavy deposits were found, under basaltic rocks. Several other leads were afterwards struck at a greater depth, running almost parallel with the first. It is now believed that tin ore exists throughout all the old river beds and valleys of the district. Some of the deposits are covered with immense masses of basaltic rock, which will require a heavy expenditure of capital to remove; but the ore is so rich and abundant that the outlay can very easily be afforded. There is reason to believe, however, that many years will elapse before the surface mines are exhausted. During the year 1883 the Vegetable Creek Tin Mining Company obtained 2,000 tons of ore from an area of 5 acres. The secretary for mines states in his last report that the flow of basalt and other geological formations in New England district indicates that stream tin will last for many years.—*U. S. Consular Report.*

Sodio-Benzoeate of Caffeine.

THIS is one of the double caffeine salts introduced by E. Merck, of Darmstadt, the others being the sodio-cinnamate and sodio-salicylate. They are recommended on account of their great solubility for hypodermic use, or wherever concentrated solutions are required. C. Schwarz gives the following directions (in the *Pharm. Zeit.*) for preparing the salt mentioned in the title: Dissolve 21.2 parts of caffeine and 12.2 parts of benzoic acid (artificial, made from toluol) in 300 parts of water, with the aid of heat, and add 16.2 parts [the author has 14.4 parts, but the salt contains one molecule of water] of benzoate of sodium. Filter and evaporate the filtrate in a porcelain capsule on the water-bath. Rub the residue to powder and dry it once more.

The other two salts may be prepared in a similar manner, using the below-mentioned proportions:

Sodio-cinnamate of Caffeine.

Caffeine.....	21.2 parts.
Cinnamic acid.....	14.8 "
Cinnamate sodium....	17.0 "

Sodio-salicylate of Caffeine.

Caffeine.....	21.2 parts.
Salicylic acid.....	13.8 "
Salicylate of sodium..	33.8 "

Cocaine Factory in Lima.

MEYER & HAFEMANN, wholesale druggists in Lima, Peru, have sent information to Europe and to this country, that a possible serious competition with European or North American manufacturers of cocaine is about to be organized in Lima.

The extraordinary demand after coca for Europe and the U. S. made it appear feasible to manufacture cocaine to advantage at its place of growth, particularly since even the mere transport over the Cordilleras already diminishes the quality of the drug, which is probably much increased by the transport at sea. Meyer & Hafeman have been so satisfied with the results of experiments made in this direction that they are already erecting works for the purpose.

The same firm also states that a French pharmacist of Lima, Mr. Bignon, has likewise undertaken the manufacture of cocaine, and it is said with good results. He is now on the way to Europe to introduce his product in the market. Meyer & Hafemann have also despatched samples of their cocaine to Paris, New York, Liverpool, and Germany.

CORRESPONDENCE.

Hospital Stewards in the Army.

Editor American Druggist:

DEAR SIR:—The correspondence in your issue of August, 1885, "Hospital Stewards in the Army," is written in a spirit of one-sidedness and with an amount of perversion of facts that I cannot let it pass without reply.

The complaint made by stewards is not that their work is excessive, or that the other non-commissioned staff officers of the army do not fully deserve their rank and pay. Everybody versed with army life knows perfectly well that the non-commissioned officer, be it commissary, ordnance, or quartermaster sergeant, or hospital steward cannot be made directly responsible for any Government property, but he is morally responsible to his chief for the same, which means if articles are missing or expended without his ability to account for them, he has either to replace the articles or take the consequences, which are generally discharge from the service—a matter of considerable importance for an old soldier, and just as disagreeable for him as dismissal to a commissioned officer. Hospital stewards can claim no more than one room for himself and one for his wife, if she is hospital matron. At some posts he has more, at others less; the writer has lived for months at an old-established post with abundant houses, during the winter months with a temperature of 25 to 30 degrees Fahrenheit below zero, in a canvas tent as quarters, with a large family. Why? Because the commanding officer did not choose to assign him other quarters. The steward gets more stoves than his allowance, if the quartermaster is kind enough to let him have them; he gets his wood cut and brought in, if the post surgeon sees so fit, and so it is with everything else; he has virtually no rights which the commanding officer or post surgeon needs to respect. The steward's uniform is the laughing stock of the army; his so-called "chevrons" are no chevrons, but a monstrosity, and hardly any of the stewards care to wear them; his clothing allowance is for five years \$193; for the other non-commissioned staff officers from \$198 to \$232. In fact, every enlisted man, except privates, receives more than the steward.

But all these are only matters of small importance, and the steward, by decent behavior and strict attendance to his duties, very soon gains the good-will of his superiors, and every comfort which lies in their power will be allowed him. A great many stewards forget that they are soldiers, and that discipline is necessary and indispensable in a regular army, and includes everybody, from the general to the last drummer boy. The great error into which your correspondent "Army" falls is in enumerating a steward's duties. His duties never cease; his main and principal duty, which "Army" has forgotten entirely, is the attendance on the sick, and in this respect he is on duty from reveille to tattoo, and from tattoo to reveille; one slip, one small error may have the loss of life of a human being as a consequence; the duty at the bedside is his principal duty, and the most exacting and the most trying. The surgeon directs and he executes; he dare not flinch, no matter what the disease may be—small-pox, typhus, even Asiatic cholera, or yellow fever—he has to tend to the execution of the surgeon's directions.

He has this duty in addition to his clerical work, which, by the way, is a great deal more than your correspondent makes it out; the prescription work, which also keeps a body on the qui

vive day and night, as all the officers, enlisted men, quartermaster's employees, and all their wives, children, and servants draw their medicines at the post dispensary; the superintendence of cooking, gardening, and police of hospital; the discipline of attendance, and sometimes of very unruly patients; the taking of meteorological observations, the keeping and preservation of large amounts of property, instruments, bedding, etc.; drawing of teeth, cupping, bandaging, etc., make an assortment of duties rendering the steward a "general utility man."

We do not growl at those duties; they are incident to our position, but the fault we find is with our rank, social status, and amount of pay; we rank after sergeants-major, regimental quartermasters, and saddler sergeants, which all three are appointed by the regimental commanders, without examination and liable to reduction to the ranks at any time. The talk of the long services of other non-commissioned staff officers will hold equally good with hospital stewards; over half the stewards now in the service have been soldiers from ten to twenty years. The writer has been nineteen years a soldier, very near eighteen of which as non-commissioned officer and hospital steward. The surgeon-general has recommended in last year's annual report the raising of our pay to \$50, being fully aware that it is an injustice to give us only \$30 per month.

I cannot see why the honorable profession of pharmacy should not have representatives in the army above the ranks. The apothecaries in the navy are warrant officers, not enlisted. Why should a similar grade be an impossibility in the army? The apothecaries in other armies are commissioned officers; why in our republican form of government should our profession be relegated so far below all others?

"EXPERTO CREDO ROBERTO."

Editor American Druggist:

DEAR SIR:—There has been much said in your past few issues concerning "army apothecaries," and you may presume there is but little remaining to be advocated relative to the subject. However, to one who is thoroughly conversant with the subject, such a presumption would be erroneous. As the writer has been subjected to the examination required of army apothecaries, and served in that capacity sufficiently long to become thoroughly acquainted with army life, as well as with all the duties of a hospital steward, he will beg leave to say a few words for the benefit of those unacquainted with, and interested in this subject, without entering upon, or into, any controversy.

The writer and individual who signs himself Hospital Steward, U. S. A., in your June number, appears to have inaugurated into his description of his situation and condition, personalities, and the author of the piece in your August number, signed "Army," is unquestionably the Second Lieutenant, to whom the steward referred as the officer who objected to the manner in which he wore his blouse. Viewing for a few moments the communications in question, we see that they originate from two extremes; the one not doing justice to his cause or assisting it, though meaning and intending to do so; the other indifferent, and apparently only affected by that clause which refers to social relations between officer and soldier.

In the March number of the *Druggist* we note an intention of the American Pharmaceutical Association to assist the army apothecaries in their endeavors to an increase in salary and rank, and no doubt, with the assistance of the association, they will be successful in receiving that which

they seek, and though the writer is in hearty accord with the good intentions of the pharmaceutical association in a few instances, he cannot conscientiously consider such assistance due the army apothecaries in toto. Whereas the writer in your June number claims to be a graduate of a pharmaceutical college and with ten years' experience, he must admit that he is an exception to the corps that he represents, for in the 150 hospital stewards now allowed by Congress, there are probably not more than six who ever attended, or graduated from, a pharmaceutical college.

All collegiate associations are willing to assist their colleagues, wherever dispersed, but they must necessarily be loth in extending a helping hand to those who are apothecaries or pharmacists by name and not by profession.

Were all the hospital stewards of the army graduates of pharmacy, their labors tending to increase in salary and rank would meet the approbation of all; but when we know but few of them could obtain positions as prescription clerks in the various cities, we must in consequence be reluctant in our sympathetic assistance, and give justice where justice is due.

It has been some years since the writer has been connected with the army, though from general observations there has been little or no change in the hospital department, and the examinations to be passed by applicants soliciting the position of hospital stewards are the same.

Were all aspirants to this position made to pass the specified examinations in materia medica, minor surgery, chemistry, prescription compounding, general aptitude for managing and conducting hospitals, English grammar, rhetoric, history, etc., as laid down by law, the hospital steward corps would comprise a fair class of druggists. But such examinations are in nearly every instance only a matter of form—a farce. Hospital stewards are men generally selected from the ranks who are in possession of good conduct, morality, and temperance, intermingled with favoritism emanating from their superiors, and without regard to their pharmaceutical abilities.

They are given rank as second-class or third-class stewards; in course of time they naturally acquire some knowledge of drugs, and if their friendly and social ties with their superiors have not become ruptured, they will appear before their post surgeon for what is termed an examination, but what is understood to be a matter of form, then await a vacancy for an appointment by the secretary of war, through the suggestion of the surgeon-general. I will dare say that there is not a pharmacist in the army to-day, but will say that but few of them owe their positions to their merits or pharmaceutical abilities. Still, those who possess all the requirements of their rank should hardly be made to suffer for the deficiencies of their colleagues; something should be done for them, but to do so would require no little reconstruction in the hospital department.

The relations between a steward's family and an officer's family have but little bearing upon his cause or the subject in question; the line of demarcation between any enlisted man and a West Point graduate who has been commissioned in the army is too broad and deep to be overcome, and will always exist. Army society is regulated by shoulder adornments, and familiarity in due proportion thereto. Those who are conversant with the class of individuals who from political possessions are educated at the expense of the government, then commissioned lieutenants, must expect it will require time for them to accu-

rately circumscribe the area of their jurisdiction, and to find fault with what would not be noticed by officers from the rank of major upwards.

When a steward owes his rank to his merits, there is no comparison between him and a quartermaster's sergeant or a commissary sergeant; the margin between a pharmacist and an individual who possesses the attainments of a teamster or a grocer clerk are too apparent and appreciable not to be perceived.

To conclude, we will hope Congress will take some steps to better the condition of the hospital stewards, and that all who are capable of assisting them to a successful issue, will do so. Increase their pay, allowances and rank, but require of them, if they are to be pharmacists, the abilities of a pharmacist of the same standing as required by pharmaceutical colleges of their graduates, before conferring upon them their degree or rank.

A SUBSCRIBER.

Editor American Druggist:

In the August number I see "Army's" reply to letter by "Hospital Steward" in June, and beg leave to express my humble view in the question.

To commence with, I wish to state that I am in the army since early part of 1862, and a hospital steward since '75. The views, as expressed by the Steward in June, are correct, with some exceptions, and he perhaps has not length of service enough to take the correct view of his position. I am married ten years; my wife is "matron," but honest work is no disgrace for any one, nor is it taken for granted that those employing servants are "ladies," as not the "position" gives this title, but the general conduct and moral of the person; consequently, a "laundress" can or could be a "lady" as well as the commander's wife. In ten years' service as a steward, I always had everything I needed, taking everything into consideration.

As regards the response of "Army," it shows plainly that he does not know much about a hospital steward's duty, but still some of his views are correct. That a steward should have as much pay as any other non-commissioned staff officer must be, and undoubtedly is, appreciated by the quartermaster-sergeant as well as the ordnance and commissary-sergeant, and our pay should be raised to \$34 per month, which would only be "justice," but no elevation in the eyes of every one. CADUCEUS.

Quantity of Imported Menthol.

PROF. P. W. BEDFORD, in reply to a query, reported to the Am. Pharm. Association that the imports of menthol for the last year were about 4,000 pounds, and that this year the amount will reach about 5,000 pounds. One portion of this is received direct from Japan, while a part of it comes by way of Europe. Of the domestic article there is but one producer, and while his product is meeting increased demand, we are unable to make any definite statement as to the quantity produced.

Menthol is finding new uses, and besides the popular form of cones as a domestic remedy for headaches, it is being used internally, and has been tried with success as a local anæsthetic. It is fair to presume that, in spite of the harm done to the legitimate uses of menthol by various manufacturers who have been sending out a much diluted article in the form of cones, the necessity for menthol production will rather increase than diminish, and we may look for imports of fully 6,000 pounds in 1886.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,576.—Pill Mass of Copaiba and Magnesia (L. P. K.).

We are asked to state whether a pill mass of copaiba and magnesia can be made so as to be dispensed at once in pills without running together.

This may be done by a method originally proposed by Rabot. The proper quantity of copaiba having been weighed out, it is intimately mixed, in a capsule, with one-sixteenth of its weight of calcined magnesia which had been previously sprinkled with a few drops of water. (The object of this is to enable the magnesia to combine with the resin of copaiba, which it will not do if both substances are dry. Instead of sprinkling water on the magnesia, which generally results in merely dampening a few isolated spots, it is much preferable to expose the magnesia, thinly spread on filtering paper, to a current of steam for a few minutes.) The capsule containing the mixture is then placed on a boiling water-bath and kept there for several minutes, when the mass will assume the proper consistence.

No. 1,577.—Quality of Commerical Cocaine (L. P. K.).

We have reason to know that the quality of the cocaine manufactured in this country is fully equal to that produced elsewhere. Indeed, we have learned from an absolutely reliable source that certain European manufacturers have repeatedly purchased large supplies of the alkaloid in this country, and have afterwards sold it as their own make.

No. 1,578.—Compound Solution of Hypophosphites (J. J. E.).

We do not know the composition of the particular brand of "Liquor Hypophosph. Comp." which you mention, but can give you a very good formula, based on that of Gibson (see *NEW REM.*, 1882, 107), and improved by Mr. J. Calvert, of San Francisco, (*ibid.*, 1883, 166).

	Troy	Gr.
Calcium Hypophosphite	11	80
Oxalic Acid	1	240
Iron Sulphate (ferrous)	2	260
Sodium Sulphate	5	120
Magnesium Sulphate	1	420
Water enough to make	100 fl. oz.	

Dissolve the calcium salt in five pints of nearly boiling water, add to it the oxalic acid, stir for a short time, and then add the other salts. Agitate for two or three minutes, allow the mixture to become cold, filter into a bottle marked for a volume of 100 fl. oz., and wash the oxalate and sulphate of calcium, which remain on the filter, with water until 100 fl. oz. of liquid are obtained.

The salts should be in coarse powder.

Each fluidrachm of the solution contains:

Ferrous hypophosphite	1.5 grains.
Calcium	1.8 "
Sodium	1.8 "
Magnesium	1.8 "

Total mixed salts	8.1 "
Hypophosphorous acid	1.5 "

During a few days after its preparation, the solution deposits a minute quantity of calcium sulphate, from which, however, it may be wholly freed by decantation or filtration.

It is a clear and permanent solution, and may be mixed with simple syrup, claret, or glycerin in any proportion, but the salts are gradually deposited from mixtures containing an appreciable percentage of alcohol.

No. 1,579.—Lead Ointment (O. L. F.).

This name has once been applied to the ointment of acetate of lead, prepared by heating together 3 parts of litharge, 9 parts of olive oil, and 4 parts of vinegar, or, at all events, the same ingredients, though in different proportions. In place of it, the Ceratum Plumbi Subacetatis is now employed.

No. 1,580.—Smelling Salts (Subscriber).

"Inexhaustible Smelling Salts" (so-called) is prepared as follows:

Introduce into the bottles intended to contain the smelling-salt, some porous absorbent material, such as asbestos, or sponge cuttings that have been well beaten, washed, and dried. This material is then saturated (without introducing an excess of liquid) with a sufficient amount of the following mixture:

Oil of Rosemary	1 drachm.
" " Lavender	1 "
" " Bergamot	1 "
" " Cloves	1 "
Water of ammonia	1 pint.

When transparent colored bottles are used, perfumers prefer to fill them with what they call "insoluble crystal salt" (sulphate of potassium). A sufficient amount of scented water of ammonia or of spirit of ammonia is then poured in, and the orifice stopped up with cotton, so that the liquid (which is not absorbed by the salt owing to the non-porosity of the latter) may not run out when the bottle is inverted.

"White Smelling Salts" are best prepared after Allchin's plan. The ordinary officinal carbonate of ammonium (which used to be called sesquicarbonate) is really a compound of carbamate of ammonium, and acid carbonate (or bicarbonate) of ammonium. By treating the salt with free ammonia, the acid carbonate is converted into the neutral carbonate (or monocarbonate). Taking advantage of this behavior, Allchin recommends to convert the officinal carbonate into the neutral carbonate, as follows:

Forty ounces of the officinal salt are broken into fragments, about the size of filberts and placed into a jar having a well-fitting lid. Into this are afterwards poured 20 oz. of stronger water of ammonia. The mixture is frequently stirred during a week, and the jar is then set aside in a cool place for three or four weeks more. If the mixture is not stirred during the first week, it sets as hard as a stone; after stirring, however, it becomes solid and dry, but can be easily removed from the jar. It is now reduced to a moderately coarse powder, something like granular carbonate of potassium, and in this state is filled into bottles, being afterwards scented with some volatile essence or with strong water of ammonia flavored with essential oils.

"Preston salt," the cheapest of all smelling salts, is a mixture of lime and some ammonium salt, either the chloride or carbonate. Equal weights of either of the latter and of freshly slaked lime are intimately mixed, tightly packed into bottles, and then flavored with a few drops of some essence.

No. 1,581.—Compressed Pills (Sub.).

The manner of making compressed pills has been often described, and several forms of apparatus have been

devised for making them. The most common form is that which we illustrated and described in our volume for 1877 (*NEW REM.*, 1877, 171), to which we must refer you. A very ingenious apparatus, suitable for making compressed pills on a large scale, has been lately devised by and exhibited at the late Meeting of the Amer. Pharm. Association at Pittsburgh. Though this is rather expensive, yet it appears to be so solidly constructed and to work so well that it will prove a profitable investment to the purchaser, provided he has to manufacture large quantities of compressed pills. In one of our next numbers we shall have occasion to speak of this subject more fully.

No. 1,582.—Solution of Lactopeptine (J. K. G.).

As you are aware, the name lactopeptine is copyrighted, and the mixture contains ingredients requiring partly an acid, and partly an alkaline liquid to render them active. Leaving aside the question of its compatibility, and taking only notice of the fact that it is in considerable use, we would say that, so far as we know, there is no standard formula recognized for a solution. An elixir has been proposed, containing 3 grains of lactopeptine to the fluidrachm. It is prepared by dissolving 384 grains of the compound in 1 pint of elixir and filtering. Some recommend the addition of about 1½ fluidrachms of hydrochloric acid to the pint, with a view of rendering it more soluble. But this addition probably renders the pancreatin and some other constituents inert.

No. 1,583.—Toilet Vinegar (C. J. R.).

Here are some formulæ.

Oil Lavender, English	2 drachms.
" Rosemary	1 drachm.
" Cloves	1 "
Camphor	1 oz.
Acetic acid	8 fl. oz.

Dissolve the camphor in the acetic acid, then add the oils. Macerate a few days, and strain.

This is generally known among perfumers as "Aromatic Vinegar."

A cosmetic or toilet vinegar is prepared, according to Piesse, as follows:

Benzoin	8 oz.
Aromatic vinegar (as above)	1 fl. oz.
Balsam Peru	1 oz.
Oil Neroli	1 drachm.
" Nutmeg	1 "
Alcohol	32 fl. oz.

Macerate (for twenty-four hours) and strain.

It may be diluted with rose-water, if desired.

Another formula is the following:

Dried Rose-leaves	4 oz.
Extract Rose, triple	8 fl. oz.
Diluted Acetic Acid (8%)	32 "
Rose Water	q. s.

The latter may be added in quantity sufficient to dilute to a suitable strength.

No. 1,584.—Extract of Violet, Lavender, etc. (C. J. R.).

You will find a copious selection of formulæ in our last number, pages 167-168.

No. 1,585.—Borax and Glycerin (H. S.).

The writer of the query says:

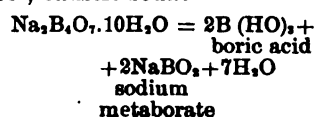
"Please explain the cause of effervescence in the following prescription and the result of the reaction:

℞ Sodii Bicarbonatis,	
" Boratis	ãã 3 ij.
Acidi Carbolic	gr. xv.
Glycerin	f 3 i.
Aquæ	q. s. ad f 3 iv.

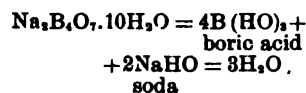
"I mixed the bicarbonate and borax with the acid and water, and no reaction took place. But, as soon as the glycerin is added to the mixture, a violent effervescence takes place."

This peculiar action of glycerin upon carbonates in presence of borax has been known, so far as we know, for

only about twelve years. It is known that borax, in presence of many substances, and particularly when the temperature is slightly raised, splits up into free boric acid and metaborate or even, under some circumstances, caustic soda:



or,



On the other hand, it is known that free boric acid added to an aqueous solution of an alkali bicarbonate, f. i., sodium bicarbonate, produces no effervescence, until glycerin is added. From the latter fact we may assume, that glycerin (as Hager supposes) acts merely by contact—to use this expression, which really does not explain anything but has still to be used in want of something better, here and in other cases. Now it is quite possible, that a dissociation of the borax, in the sense above stated, takes place in mixtures like that quoted in the beginning. Indeed, the presence of any substance capable of readily combining with sodium, such as carbonic acid, hydrosulphuric acid, iodine, bromine, salicylic acid, etc., induces the decomposition. But the free boric acid, as we have already explained, does not act on the bicarbonate until the glycerin is added. If the mixture contained a simple carbonate, and no heat is employed, the glycerin does not produce effervescence.

But any bicarbonate, even when present in traces, is decomposed, and exactly one-half of its carbonic acid is expelled. For this reason, Hager has even recommended the reaction for the determination of bicarbonates in monocarbonates. Simple carbonates, however, are also decomposed, when heat is employed. These facts account for the phenomenon of effervescence, but what the particular products are is not exactly known.

Senior and Low suppose that the glycerin sets the boric acid free, and that the free acid then acts on the carbonate. But it is a simple matter to show that free boric acid alone does not eliminate carbonic acid from alkaline carbonates in solution. Therefore, even if the glycerin sets the acid free, there must be some other property of the glycerin which produces the effervescence.

No. 1,586.—Hoyt's German Cologne (D. O. R.)

The formula for this is only known to the manufacturers. It is impossible for us to furnish you any recipe that we could guaranty to produce a similar flavor. We can give you, and have given in many previous issues, numerous excellent formulas for cologne, but are unable to give you the means of perfectly imitating the favorite brands. And even if we knew the formula of such an article—which is not a medicine, and has no doubt been worked out by the inventors at the expense of much valuable time and material—would you consider it fair for us to destroy their business by giving away their secret which does not belong to us? Put yourself in their place. Would you like to be treated in this manner yourself?

While we shall always respect the business secrets of any firm whose products are not remedial agents for the treatment of the sick, we shall always oppose any secrecy or proprietary claim or patent in medicines, and shall not consider ourselves bound to silence should we ascertain the methods of manufacture used by the "inventors."

We must refer you, however, to

some further remarks touching this subject, which you will find on another page.

No. 1,587.—Ward's Iron Mixture (H.)

This correspondent writes: "Yesterday I saw the following prescription in the hands of a friend of mine:

R Mist. Ferri (Ward's)..... ℥ ij.

"Can you tell me where a formula for this can be found? We have searched through all the formularies and works of reference at our disposal, and were unable to find such a formula. Perhaps it is a private formula that can only be put up by the prescriber's brother, who has a store here."

We do not know such a mixture as the above, and think it is not improbable that some private formula is intended. However, it is just possible that the prescriber has been in the habit of ordering the mixture much used in the public hospitals of New York City, and known there as "Ward Iron," which means that it is the regular iron mixture used as tonic in the wards of the hospital, when no other is ordered. Its formula is:

R Tinct. ferri chlor.,
Syrupi..... 55 fl. oz. 1
Aque..... fl. oz. 2
M. Dose: A teaspoonful.

Of course, it would not be proper to dispense this without ascertaining beforehand whether the prescriber actually intended this mixture or not.

No. 1,588.—Offer of Domestic Bismuth and Manganese Ores (—)

One of our correspondents in the United States is the owner of valuable manganese and bismuth deposits, and desires to know if there is a market for either.

No. 1,589.—Bottling, Washing, Corking Machine, etc.

Supplement to query 1,569. We suggest that you correspond with Mr. W. B. Keller, 114 Nassau st., New York.

No. 1,590.—Salicylic Acid as a Preservative for Solutions of Alkaloids (K.)

Salicylic acid, as well as boric acid, has long been employed as a preservative for solutions of morphine, atropine, and other alkaloids, and have both answered the purpose quite well. A cold saturated solution of salicylic acid contains about 1 grain of the acid in 400 minims, and is so weak that the presence of the acid does not interfere with the action or reactions of the alkaloid unless ferric salts are present, in which case a more or less deep red solution results. It has lately been asserted that boric acid is less irritating than salicylic acid, when solutions for application to the eye are to be made. So far as we have learned from competent observers, this question is still open. But boric acid being known to be quite bland in its action otherwise, it is perhaps preferable, on general principles, to use the latter. A 10% solution is strong enough.

The editor of this journal has long been accustomed to add from 2 to 4 grains of hydrate of chloral to each ounce of the solution of morphia sulphate commonly employed hypodermically, and has found it admirably successful in preventing the development of the fungus which causes decomposition of the morphia salt.

No. 1,591.—Effect of Oil of Bergamot on Corks (I.)

We are asked: "Why does the cork of an oil of bergamot bottle become bleached after being in use for some time?"

Essential oils, of the nature of oil of bergamot, which are free from oxygen when pure and fresh, are gradually affected by exposure to air, some oxygen being absorbed while a peculiar

resin is formed at the same time. Oil of turpentine is a familiar example of this. Oils of bergamot, orange, and lemon undergo the same change, and gradually become so altered that they lose their specific odor and acquire an odor and properties resembling that of common oil of turpentine. This oxidizing action, however, is accompanied by a development of ozone, and it is the latter which bleaches the corks. This development of ozone is made use of for disinfection. For instance, if a spray of oil of turpentine, oil of eucalyptus, etc., be discharged into a room with free access of sunlight, enough ozone is generated to purify the air by oxidizing all suspended foreign substance that can combine with oxygen, and the air will become as fresh and invigorating as that met with in a pine forest.

When the cork of an oil of bergamot bottle shows signs of being bleached, it is high time to examine the condition of the oil. It will then probably be on the road to destruction.

No. 1,592.—Excipient for Cinchonidine Pills (I.)

In our opinion, a very good excipient for sulphate of cinchonidine is a mixture of glycerin and wheat-flour (5 to 1 or 3 to 1, or even less), heated together, with constant stirring, at a temperature of 240° F., as proposed by Martindale. Or else, the official mucilage of tragacanth may be used. Glucose also is a suitable excipient.

No. 1,593.—Prescription Query (J. W. H.)

We are asked whether the term "No." in the direction appended to the following prescription is correct.

R Quinina Sulph. gr. v.
Pulv. Ipecac. et Opii..... gr. v.
Sacch. Lactis..... gr. xx.
M. Fiat chartulae No. v. dividenda.

The abbreviated word "No." stands for the Latin ablative *numero*, meaning here "by number" or "in number." This ablative *numero* is in such cases redundant, but is by no means incorrect, being used in connection with numerals even in the classic period (Cicero, Cæsar, Livius, etc.). In prescription Latin it is even advisable to use it, since it helps to draw special attention to the fact that the term expressing the number follows immediately after the abbreviated word.

But the sentence is incorrect otherwise. The passive participle "dividendus, a, um," means "one who must be divided," stands outside of the construction. The correct wording would be: *Fiat pulvis, in chartulas quinque* (or "in chartulas v.," or "in chartulas numero (No. v.) dividendus." = There shall be made [fiat] a powder [pulvis] to be divided [dividendus] into five powders [in chartulas quinque].

The same correspondent sends us a clipping from a medical journal* in which the following prescription appears:

R Liq. Atropinæ..... mī.
Liq. Ammon. Anisat..... ℥ xv.
Aque..... ℥ i.
M. 6tā vel 4tā horā.

And he is in doubt as to what the physician really meant by the directions.

In our opinion, there is no doubt at all that the meaning is: "every 6 or 4 hours," which would have been in better Latin "*Sexta quaque vel quarta quaque hora*."

No. 1,594.—Preserving Eggs (E. C. L.)

Among the recipes recommended for this purpose, the following are said to be reliable:

* J. Milner Forthright, in N. Y. Med. Record.

1. Pack the eggs, which must be perfectly sound and fresh, in powdered borax, or in a mixture of borax and powdered willow charcoal, made in the proportion of one part of the former to three parts of the latter.

2. Slake $\frac{1}{2}$ lb. of lime with water, add $\frac{1}{2}$ lb. of common salt and $\frac{1}{2}$ lb. of sugar and enough water to make 3 gallons. Into this liquid introduce the eggs, taking care that they are kept submerged.

3. Coat the eggs with melted paraffin or with a solution of shellac in borax.

4. Pack the eggs into clean sand, in a tight vessel, and pour upon them a solution of common salt, containing 4 oz. to the gallon, which has been saturated with chloroform. Care must be taken that the chloroform held in solution do not evaporate. Should it do so, the saline solution should be drawn off from time to time at the bottom, re-saturated with chloroform, and again poured on.

No. 1,595.—Prescription Difficulty (W. F.).

This subscriber is in the habit of preparing a mixture containing syrup of tar, syrup of benzoin, fluid extract of squill, and spirit of nitrous ether. He says that in a short time after being made it deposits some flakes, even if the fluid extract squill is not added.

Regarding the difficulty encountered, we would say that it would be necessary for us to know exactly the proportions of the ingredients, as well as the exact methods by which the two syrups are prepared, before being able to answer the question intelligently.

No. 1,596.—Solution of Santonin (R. C. G.).

We are asked to state how a clear solution can be made from the following mixture:

	Parts.
B. Santonini	8
Sodii Bicarb.	4
Ext. Spigel. et Senn. Fl.	24
Aq. Aurantii.	8
Syrupi	100
Syr. Rhei.	12
Aque	148

If santonin is to be used for killing intestinal worms, it should be administered in such a way that it will arrive unabsorbed in the intestines. When it is in solution, it is very unlikely to reach the place where it is wanted, and will not be likely to exert any effects, locally, upon the worms. Santonin is, however, sometimes used as a remedy in renal calculi and other diseases. In such cases it is quite proper to give it in solution, for which purpose the most suitable form is the santoninate of sodium (see U. S. Pharm.).

In the above prescription, if the santonin be boiled with the water and the bicarbonate of sodium, the former will be gradually dissolved, and the santoninate will result. The change may be brought about more rapidly by substituting caustic soda (for every 10 parts of santonin, 12.2 parts of anhydrous soda) in place of the bicarbonate.

It is inadmissible, however, to do this without consulting the physician. The latter may for a special purpose desire to administer the santonin undissolved, so that it may eventually reach the intestinal worms, to whom the dose will be fatal.

No. 1,597.—Rotary Pill-Machine (B.).

(Supplement to Query 1,570 contained in our last number.) In our answer to the query of our correspondent concerning manufacturers of Rotary Pill-Machines, we stated that we did not know of any one in the United States. We are, however, informed by Mr. A. H. Wirz, of 913-917 Cherry street, Philadelphia, who makes all kinds of superior pill ma-

chines as a specialty, that he also manufactures machines such as our correspondent inquires about.

See also our advertising pages.

No. 1,598.—Compound Fluid Extract of Sarsaparilla for Syrup (W.).

The U. S. Ph. directs to make the syrup from a previously prepared tincture which is to be deprived of resinous substances by dilution with water and filtration. Among the ingredients is guaiacum wood, of which nothing probably will enter the final product, and which might just as well have been omitted. A fluid extract, that will keep, and may be mixed with syrup, can be made as follows, the drugs being in powder as directed by the U. S. Ph.

Sarsaparilla	150 parts.
Guaiacum Wood	20 "
Pale Rose	12 "
Glycyrrhiza	12 "
Senna	12 "
Sassafras	6 "
Anise	6 "
Gaultheria	6 "
Glycerin	50 "
Diluted alcohol	q. s.
Water	q. s.

To make 250 parts.

Moisten the mixed powders with a mixture of 50 parts of glycerin and 500 parts of diluted alcohol, and percolate in the usual manner until 600 parts of percolate are obtained, using enough diluted alcohol to complete the volume. Evaporate the percolate to 250 parts, add 100 parts of water, set aside for twenty-four hours, and filter. Then evaporate again to 200 parts, add 50 parts of alcohol, and, if necessary, filter again.

On a large scale, this preparation may be made by repercolation. The menstruum having been properly prepared, in the first operation, 200 parts are collected as finished product. This is not quite exact, but it is necessary to obtain in the first and next few succeeding operations such a reserve as will gradually enable us, with each subsequent operation, to obtain a more and more uniform product. After about six operations, this point will have been attained. To repeat, in the first operation 200 parts of so-called "fluid extract" are obtained, and may be used for purposes where accuracy is not needed. Next 250 more parts are displaced as reserve, and the residue exhausted with more of the same menstruum to obtain a second reserve.

In the next operation, the powders are moistened and treated first with the reserve, and gradually the second reserve is poured on, until 225 parts of "Fluid Extract" are obtained. By means of the balance of the second reserve and of more new menstruum, we again obtain a Reserve and Second Reserve. In the next operation, conducted in a similar manner, we collect 250 parts of "Fluid Extract," and continue to do so thereafter.

This is not a "Fluid Extract" in the usual sense of the word, as it does not represent minim for grain. To make the syrup, mix the Comp. Fluid Extract, 1 part, and syrup, 3 parts.

No. 1,599.—Soluble Tolu (W.).

It is not possible to make a "Fluid Extract" of Tolu, as you call it, so that it shall be miscible to a clear liquid with syrup or water. The best plan to make a "Soluble Tolu" is probably that proposed by Rother (see our last number, page 179). Compare also February number, page 26.

No. 1,600.—Red Color for Show-Bottles (A. M.).

Try the following: Mix 3 drachms of cudbear with one gallon of water, and add 4 fl. oz. of nitric acid. Let stand forty-eight hours and filter.

By adding more water a lighter tint may be produced.

Information Wanted.

We have received several queries, which we request those of our readers who may be specially familiar with the subjects to answer.

1. Wanted a formula for "Tincture of Pepper;" also one for "Alcoholic (sic) Solution of Starch," such as are used by rectifiers [should it not read "compounders?"] of liquors.

2. How are compressed lozenges made, and who manufactures apparatus for making them? (Compare above, answer to query 1,581, where a new apparatus for making compressed pills is mentioned, which may perhaps be made applicable for lozenges).

3. Composition of "Edwards' Tar, Wild Cherry, and Naphtha Cough Syrup."

4. Composition of S. S. S. Vegetable Blood Purifier put up in Atlanta, Ga.

5. Is any oxalic acid made from saw-dust in the U. S., and if so, where?

AMERICAN PHARMACEUTICAL ASSOCIATION.

THE thirty-third annual session of this association was opened in Pittsburgh, Pa., on the 8th of Sept. by President Ingalls, and addresses of welcome were made by Mr. G. H. Anderson, of the Board of Trade, and Mr. G. Kelly, the Local Secretary. The remainder of the first session was mainly occupied with routine business, votes of thanks, and reports of delegates, officers, and committees, and a telegram of greeting was directed to be sent to the British Pharmaceutical Conference, then in session in Aberdeen, Scotland.

A resolution was introduced by Mr. Sheppard, of Boston, providing for the following change in the by-laws:—Chap. 9, Sec. 7, inserting the word State before the word association, so as to limit the nominating committee to delegates from colleges of pharmacy, and State pharmaceutical associations, together with five members at large to be appointed by the Chair. This change was adopted at a subsequent session.

At the second session, additional routine business was transacted, viz.: The minutes of the Council were read and approved. The Finance Committee reported \$4,278.79 in the treasury, \$3,000 invested to the credit of special funds, and about \$1,000 to be collected for arrears of dues.

In the minutes of the Council it was shown that the membership had been increased by 40 new members, and 3 reinstatements during the preceding year, and at the date of the report numbered 1,324, allowing for a loss of 96; 22 by death, 7 by resignation, and 67 dropped for non-payment of dues.

The Committee on the Drug Market reported a quiet retail business during the past year, which was attributed to an excessive proportion of retail stores, and an increasing sale of proprietary goods in general stores and groceries. The colleges were said to be creating more doctors and pharmacists than the needs of the population require, and the influence of physicians in encouraging the use of secret remedies was severely censured. As a rule, the prices of drugs have been lower during the year than formerly. The committee also remarked the want of interest manifested by pharmacists generally, in attempts to secure a repeal of the tax on alcohol. In the course of the discussion which followed, a member from San Francisco created a sensation by his statement, that the practice was quite extensive in that city of paying a percentage to physicians on their prescriptions, amounting, in some instances, to sixty per cent.

The Committee on Legislation reported that an attempt to secure the passage of a law making hospital stewards of the Army and Navy commissioned officers had failed. Maine, Massachusetts, Michigan, Minnesota, and Kansas have passed laws governing the practice of pharmacy.

The Committee on Proprietary Medicines presented a long report, in the course of which was a draft to be used in forming State laws to regulate the sale of these articles. The following resolution, also embraced in the report, was adopted:

Resolved, That it is the deliberate opinion of this Association that the labels of proprietary medicines ought to carry the names and proportions of the ingredients.

Among the important transactions at the morning session on the third day was the adoption of a resolution increasing the salary of the Secretary from \$500 to \$750, and the receipt of a congratulatory telegram from the British Pharmaceutical Conference.

At the morning session on the fourth day, Sept. 1st, 1886, and Providence, R. I., were adopted as the time and place for the next meeting. A resolution was adopted prohibiting the entertainment committee from interfering with the business sessions in the morning and afternoon of the second and third day of the meeting.

It was voted to adopt the New York and Brooklyn Formulary, and to publish it in the proceedings and separately.

The following recommendations, made in the course of the President's address, were approved by the special committee thereon and adopted, viz.:

"That employers shall exercise unremitting care in choosing the material for the future pharmacist, by thoroughly examining each applicant, who desires to enter the drug business, in the branches of an English education. This examination should at least embrace arithmetic as far as proportion, orthography, grammar, English composition, geography, and American history.

"That the proper test of fitness of a candidate for the license of a State examining board is the State examination."

The recommendation that the initiation fee be abolished was not approved, but the suggestion by the committee, that in its stead the fee be merged in the life-membership fund and set aside to form the nucleus of a permanent fund, was adopted.

The constitution was also amended so as to require the investment of the initiation fees and life-membership fees in United States securities.

The officers and committees chosen were as follows:

OFFICERS.

President, J. Roberts, Baltimore; *Vice-Presidents*, A. H. Hollister, Madison, Wis.; A. B. Prescott, Ann Arbor, Mich.; J. S. Evans, Westchester, Pa.; *Permanent Secretary*, J. M. Maisch, Philadelphia; *Treasurer*, C. A. Tufts, Dover, N. H.; *Local Secretary*, William B. Branding, Providence, R. I.

COMMITTEES.

Drug Market, A. H. Jones, Philadelphia, Pa.; E. W. Cutler, Boston, Mass.; M. H. Kline, Philadelphia, Pa.; C. F. G. Meyer, St. Louis, Mo.; L. Lehn, New York. *Progress of Pharmacy*, C. L. Diehl, Louisville, Ky.; *Council*, S. A. D. Sheppard, Boston, Mass.; W. Saunders, Ontario, Can.; A. E. Ebert, Chicago, Ill. *Papers and Queries*, J. U. Lloyd, Cincinnati, Ohio; W. W. Bartlett, Boston, Mass.; V. Coblenz, Springfield, Ohio. *Prize Essays*, C. L. Diehl, Emil Scheffer, Louisville, Ky.; O. Oldberg, Chicago, Ill. *Legislation*, J. M. Maisch, Philadelphia,

Pa.; S. A. D. Sheppard, Boston, Mass.; E. Bocking, Wheeling, W. Va.

Delegates to the National Wholesale Drug Association, C. A. Heinitsh, Lancaster, Pa.; C. Senert, Baltimore, Md.; J. T. Shinn and C. Bullock, Philadelphia, Pa.; J. L. Lemberger, Lebanon, Pa.

The following special committees were appointed during the sessions: *President's Address*, G. F. H. Markoe, Boston, Mass.; O. Oldberg, Chicago, Ill.; J. P. Remington, Philadelphia, Pa. *Exhibits*, C. G. Stone, Detroit, Mich.; A. Robbins, Philadelphia, Pa.; F. T. Whiting, Barrington, Mass.; A. Meinger, Cincinnati, Ohio; K. Simmons, St. Paul, Minn. *Time and Place of Meeting*, W. S. Thompson, Washington, D.C.; S. A. D. Sheppard, Boston, Mass.; G. W. Sloan, Indianapolis, Ind.

Elsewhere in this issue will be found the substance of a number of the scientific papers presented during the meetings.

ENTERTAINMENTS.

Although this feature of the meetings of the association has always been remarkably attractive, this one was unusually so. The reception at the Monongahela House was largely attended. The exhibition by the Iron City Microscopical Society, which followed immediately after, was provided with a large number of microscopes and a great variety of objects of popular interest. Composite photographs, by the method proposed by Galton, of England, were also shown, one being made up of sixteen portraits of ex-presidents of the American Association for the Advancement of Science, and the other from some portraits of criminals.

A concert of remarkable excellence, followed by a ball, was held on Wednesday evening.

On Thursday evening a supper was given at the Monongahela House, which was enlivened with speeches by the President elect, Mr. Roberts, Dr. J. McCann, Rev. W. J. Reid, W. D. Moon, Esq., Mr. C. Harrison, of the *Commercial Gazette*, Hon. J. S. Dravo, ex-President Ingalls, Dr. Menninger, of Brooklyn, President E. A. Sayre, of the N.R.D.A., Mr. S. A. D. Sheppard, and others.

Among the outside attractions were visits to the Edgar Thompson Steel Works, to glass and cork factories, the Natrona Soda Works, etc.

EXHIBITS.

NEW YORK houses were represented by McKesson & Robbins, who showed a very extensive line of beautiful goods of all kinds, both crude and manufactured. W. H. Schieffelin & Co. exhibited pharmaceutical products, special attention being called to concentrated spirit of nitrous ether, bisulphate of quinine, and muriate of cocaine; their scale preparations, coated pills, and fluid extracts were also notable. Theodore Ricksecker's perfumes were remarkable for their quality as well as the choice manner in which they were put up. Lazell, Dalley & Co. were also exhibitors of fine perfumes, and made a most attractive display. Young, Ladd & Coffin showed the Lundborg's perfumes in well-known shapes and variety. The Chesebrough Manufacturing Co. exhibited "Vaseline;" Seabury & Johnson, surgical dressings and plasters; A. Getting & Co., triple-extracts and perfumes; A. Major, cement; and The Smith & Shaw Electric Co., appliances peculiar to their line of business. Tarrant & Co. were on hand with a general assortment of drugs as well as essential oils and other specialties. Neidlinger Brothers, powder folders.

PHILADELPHIA was very largely represented. Powers & Weightman showed rare and valuable products in profusion. W. R. Warner & Co. had,

besides their famous pill-coatings, salts for extempore manufacture of mineral waters, and fluid extracts, elixirs, etc. Smith, Kline & Co. were also exhibitors of fluid extracts. J. Wyeth & Bro. showed their specialties in compressed pills, elixirs, fluid extracts, menthol, etc. R. M. Sommers exhibited an apparatus for compressing pills, tablets, troches, granules, etc.; Robert Shoemaker & Co. showed crude drugs of choice grades; Wiley & Harris, pills *galore*; Turner & Wayne, druggists' sundries; Gillam's Sons, paper tops for corks and labels in great variety; W. B. Burk & Co., cork, sponge, and chamois; Londer & Hill, chamois and sponge, a specimen of the latter measuring somewhere about a yard across. Whitall, Tatam & Co. had a great display of glassware, and Rosengarten & Son showed fine pharmaceutical chemicals; E. F. Houghton & Co., petrolates; Vail Bros., "ideal" tooth powder.

Pittsburg dealers took advantage of the opportunity to do themselves credit. Armstrong Bros. & Co. exhibited corks; Hartje Bros., twine, paper, etc.; C. F. Wells & Co., painters' supplies; J. L. Dawes' Sons & Co., labels and shelf ware; Hunt & Clapp, chemical apparatus; G. Irwin, wines; and S. S. Marvin & Co., nursery biscuit.

Baltimore was represented by Vögeler, Son & Co. with perfumes; H. F. Miller, with seamless tinware, and Burrough Bros. Manufacturing Co., with extracts.

Massachusetts had few exhibits, comparatively. The National Plaster Co., of Lowell, had some beautiful examples of their workmanship. The Sparrow mixer, of B. F. Sparrow, of Boston, was there.

St. Louis had but one notable exhibit, i. e., that of the Mallinckrodt Chemical Works, but that was of the finest character and attracted much attention.

Ohio was represented by W. S. Merrell & Co., of Cincinnati, with their special extracts from the fresh plant and other pharmaceutical products largely in use among eclectic practitioners. G. F. Burton, of Springfield, showed an improved percolator.

N. V. Randolph, of Richmond, Va., had a display of the paper boxes for which the house is so famous; and the Binghamton (N. Y.) Oil Refining Co. had a great variety of things made from petroleum.

James S. Kirk & Co., of Chicago, soaps and perfumes.

The menthol produced by Mr. A. M. Todd, of Nottawa, Mich., was much admired; and A. B. Stevens, of Detroit, Mich., showed scale-opium.

The association decided at this meeting that in future it would not take charge of an exhibition.

BIBLIOGRAPHY.

CHOLERA: Its Origin, History, Causation, Symptoms, Lesions, Prevention, and Treatment. By Alfred Stillé, M.D., LL.D., etc. Philadelphia: Lea Brothers & Co., 1885, pp. 164, 8vo.

THERE are few diseases with which the human race is afflicted about which so much has been written as cholera. The titles of the books and papers alone would make a large volume. With each epidemic new theories are advanced and old ones re-argued, and, after all, our knowledge of cholera has not been increased in proportion. When an epidemic is threatened, however, it is useful to have a good and fresh resumé of the most reliable information respecting the disease; and such a one may be found in the little book here noticed. The writer is well known as one of the most conservative of the day, and his long familiarity with the province of therapeutics makes his writings on this subject especially practical.

American Druggist

Vol. XIV. No. 11. NEW YORK, NOVEMBER, 1885. Whole No. 137.

NOTES ON PRACTICAL PHARMACY.*

[Continued from page 192.]

PILLS.

We shall describe further on the processes for gilding, silvering, and varnishing pills.

PILL SIEVES.—For the purpose of removing any excess of conspergent powder from pills, they are poured into sieves, which are of the form and shape of little colanders, about 2½ inches in diameter.

The handles of these pill sieves are curved downward, so as to allow the sieve to stand on the table unsupported.

The **PILL PLATE** is of wood, about 4 inches in breadth, and is used for collecting the pills, or as a rest for the sieve. A smooth china dessert-plate is, however, a good substitute, and, in fact, more practical and elegant.

These machines, etc., are cleaned with a brush, but the wooden parts should not be allowed to remain too long in contact with water, while warm water should not be employed at all when the machines, etc., are made of horn.

Pills containing hygroscopic, volatile, or strongly smelling substances should be dispensed in glass bottles, and others in boxes.



Pill counter.

CLARIN'S PILL-COUNTER.

[A very simple and convenient appliance to be used when a considerable number of pills are to be counted and boxed, is made by A. B. Clarin & Co., of Paris, but may be readily constructed by any person possessed of any mechanical dexterity. The adjoining illustration requires no verbal description. On scooping up a quantity of pills and slightly shaking the apparatus, the holes in the false bottom are filled, and the remaining pills can then be poured out. On raising the false bottom, the pills retained by the openings drop through, and can be poured out by way of the spout.]

PRESCRIPTIONS FOR PILLS.

When a certain quantity or size of pills are prescribed, the weight of the ingredients is indicated, or the quantity is left to the compounder by the phrase *quantum satis* (q.s.), so that the necessary addition is made for the mass. The terms used for the number or weight of pills are:

Misce lege artis, fiant pilulæ No. (numero); or *M. l. a., ut fiat massa pilularis, ex qua formentur pilulæ No. x.* *M. Fiant lege artis pilulæ ponderis x.*

DIVIDING PILLS.

Thirty pills (twenty-four in this country) can be cut off by the ma-

chine. Therefore the mass to be made into pills should be divided in as many parts as 30 (or 24) enters into the entire number of pills ordered.

It is a very simple affair to divide a pill-mass into a certain number of pills, no matter what kind of a pill-machine may be at hand.

When the physician prescribes a pill-mass without the so-called *quantum satis* adjunct, with the indication of the weight of the pills, the compounder must add a powder to give the pill-mass consistency, but as it will then weigh more than intended by the prescriber, the mass must be so divided that the intended dose must remain the same in every pill, although they might be slightly heavier. They will not be too heavy if a suitable powder is employed. If, on the other hand, the prescription contains a *quantum satis*, the prescribed weight must be maintained. For instance:

	Gm.	Gr.
B Opii puri	0.5	7½
Herb. digital.....	2.0	80
Extr. Dulcamar	2.5	88
M. f. pil. pond. 0.125 (2 grains).		

An adjunct of 0.85 Gms. (14 grs.) *Rad. Althææ pulv.* will be required to form the mass, but it will cause it to weigh so much more. Still only forty pills will be made out of it, so that each pill will only contain 0.0125 Gm. (1¼ gr.) opium and 0.05 Gm. (¾ grs.) of digitalis.



s, Pill sieve; t, Pill plate.

AGENTS FOR PRODUCING CONSISTENCE AND COHESION IN PILL-MASSSES.

It is well known that to obtain good pills, the mass must contain in most cases a fibrous powder (vegetable powder). It is not sufficient to have the pills a good, round shape, and of firm consistency, they must be put up so as not to fall in pieces, and crumble, flatten out, or stick together, after a few days, when handled. A vegetable powder, especially a fibrous or mucilaginous one, entering into the composition of a pill is a guarantee of its keeping. As such a powder is not always prescribed by the physician, it is the compounder's duty to select one that has no effect on the action or chemical composition of the pills. The agents generally used for obtaining consistence and cohesion are as follows:

Powdered gum arabic is not a very valuable cohesive agent, when used freely to form the pills. For the same reason it is objectionable as an agent for obtaining consistency, but with a ten-per-cent addition of the powdered althæa root, it serves both purposes.

Powdered althæa root is the powder most generally used for the above purposes, the relatively small quantity of it required is owing to its mucilaginous character, and it is therefore valuable on this account. When too freely added to the mass, it not only lessens the action of the medicine by its mucilaginous matter, but also dries it up and hardens it so that it passes out with the feces undissolved. The mucilaginous matter that forms on

the surface of the pills renders them slippery, and weakens the digestive action on the hard pill core; besides, when the mass contains too much of it, it becomes elastic and tough, and the required globular shape cannot be given the pills. It therefore should be used only in small quantity (from 1 Gm. to 5.0 or 10.0 Gm.) as a cohesive agent, and employed to give consistence only when a less desiccating powder would add too much to the weight of a very soft pill-mass. Three parts of althæa powder require two parts of water to make the mass. In large pharmacies two kinds of constituent powder are kept on hand; they are made up from the following formulæ, and kept in glass vessels.

White Constituent.

	Parts,
B Althæa powder	10
Rye flour ..	10
Powdered sugar.....	10
Powdered orris root.....	70

This constituent is used only for white or whitish masses, and 25 to 50 Gm. kept prepared.



Salleron's Drop Counter.

Yellow Constituent.

	Parts.
B Althæa powder	15
Rye flour.....	10
Powdered sugar.....	10
Powdered orris root	50
Powdered gentian.....	15

This constituent is used for colored masses.

White bole is an excellent constituent for mixtures with salts that would be decomposed by vegetable adjuncts, such as pills containing nitrate of silver, chloride of gold, chromate, bichromate, permanganate, or chlorate of potassium, iodine, etc. The white bole, washed white, and consequently free from sand or carbonate, yields a good pill-mass with water; 10.0 Gm. requires about 3.6 Gm. of water. White beans powdered also form a good binding and constituent agent. Three parts well dried beans require two parts of water to obtain the proper consistency.

Powdered orris root is not a cohesive agent, but is, on the other hand, a harmless article to give consistency.

Powdered licorice root contains a considerable quantity of mucilaginous matter, and is consequently but a weak constituent. When the *extractum* or *succus liquiritiæ* is an ingredient, or when the pills are powdered with them, it is advantageously employed to give consistency, as it has but very slight medicinal effect. Two parts of it require one part of water to form the mass.

Powdered sugar without a mucilaginous adjunct makes a very poor mass as a rule. Syrup, in conjunction with

*The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

the althæa root powder, forms a very useful constituent.

Glucose is a very serviceable excipient for pill masses, but it is seldom prepared in suitable powdered form.

Powdered Tragacanth, in the form of a very consistent mucilage, is a good constituent for masses containing a great deal of salts. It can also be employed in smaller proportions to give consistence to very soft pill masses. It requires more than the same quantity of water, or three parts of simple syrup, or of glycerin, to make the mass. Tragacanth is always a suitable constituent when the mass is too soft, and the weight not to be increased. When the mass crumbles, a very little tragacanth powder and a few drops of glycerin are added; a little shaking will then give them the required plasticity.

Glyceritum Tragacanthæ, made of 3 parts tragacanth, 9 parts of glycerin and 4 parts of water, was recommended some years ago as a vehicle for pills, but the success attending its use was very small.* The althæa powder is to be always preferred.

The powdered *tubera salep* is also employed to give consistency to pills containing much aqueous extract; one part will absorb as much as three parts of water. It is only made use of, however, where the addition of other vegetable powders would increase the weight of the mass too much, but always in combination with a little althæa powder.

In adding water, or spirits of wine, to the mass to give it more consistency, the flask should never be used, but a little of the liquid poured into a spoon or small bottle, or better still a drop glass like that of Salleron's drop-counter, which should be kept half filled with distilled water.

Drops can never be counted with any degree of certainty from large bottles. Pill-masses with mucilaginous matters will bear water only, and no spirits of wine, as the latter makes them brittle.

Water can be advantageously replaced in all such cases by diluted glycerin or *aqua glycerinata*, a mixture of equal parts of glycerin and distilled water, as the mass is rendered more plastic, and slimy pills are not so hard when dry, and do not mould so readily. The hygroscopic quality of the glycerin does not come into play in this case, as is seen in practice.

As the above-mentioned dry constituents absorb a certain quantity of water, for which a certain time is required, they must be added carefully, and allowance made as if for a rather soft mass.

Vegetable-powder ingredients will always take a certain time to combine with the humidity. A mass that has been well prepared and is plastic may become quite brittle after fifteen minutes, owing to the absorption of the water adjunct or the humidity of the paste extracts. If the mass is large, it should be left standing for ten or fifteen minutes, and then, if necessary, its plastic state may be restored by adding a little more dilute glycerin, if this should prove necessary.

PILL MASSES WITH VEGETABLE POWDERS; EXTRACTS AND SYRUPS SOLUBLE IN WATER.

Good pill masses are obtained by mixing vegetable powders with extracts. If the former contain some mucilaginous ingredients, so do the saccharine extracts; but the proper proportions of the quantities will correct all this. As a rule, $1\frac{1}{2}$ to 2 parts of powder require 1 part extract of soft, paste consistency, and $\frac{1}{2}$ to 1 part of powder to 1 part of an extract that has almost the pill consistency. Mucilaginous powders require on an average $\frac{1}{2}$ ex-

tract more; as Senega-root powder, Colombo nut, and Barbadoes nut. Such mucilaginous substances seldom require any addition of althæa powder or other viscid constituent.

The quantity of the extract or syrup adjunct is usually left to the judgment of the compounder, who does not add them at once, but in two or three portions, or according as the mass is kneaded.

Extracts should not be taken from bottles with the same spatula used for working the mass, but a clean one used instead; and the extract cleaned off with the pill spatula, or rather with the pill measurer.

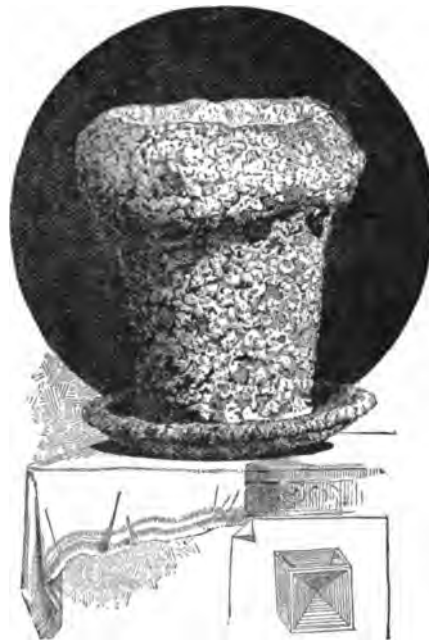
The following are examples:

℞ *Herbæ Digitalis* 5.0
Extr. *Hyoscyami* q. s.
M. fiant massa pil., ex qua form. pil.
No. 50. Consperg. Rad. Irid. pulv.

℞ *Herbæ Digitalis* 5.0
Extracti *Hyoscyami* (2.5)
Rad. *Althææ pulv.* 0.3
Fiant pilulæ 50, etc.

℞ Rad. *Rhei opt.*,
Rad. *Gentianæ* āā 7.5
Extr. *Gent.* q. s.
M. fiant pil. pond. 0.125.

℞ Rad. *Rhei opt.*,
Rad. *Gentianæ* āā 7.5
Extr. *Gent.* (9.5)
M. fiant pilulæ pond. 0.125 (No. 196).



Salt in ornamentation.
[See p. 205.]

If the quantity of the extract that has been prescribed is too large, so that the mass will be too soft, the extract, if of special activity, should be added in a dry state, if convenient, or else some other agent for producing consistency.

Specially adapted for this purpose is $\frac{1}{10}$ or $\frac{1}{20}$ of the weight of powdered tragacanth. When the constituent powders are mixed with the extract in this proportion, the mass should be left undisturbed some ten or fifteen minutes before being made into a mass, as it does not thicken at once, as has been mentioned before. If the extract, however, does not possess any peculiar action, a lesser quantity is used, and the powder of its vegetable is added in sufficient quantity. When too little extract is prescribed, some dilute glycerin or water are added; or, if there is a paucity of the cohesive agent in the mass, some althæa or constituent powder should be added.

Examples.

℞ *Herbæ Digitalis*,
Extr. *Hyoscyami* āā 2.5
M. fiant pilulæ numero 50. D. S. as directed.

℞ *Herbæ Digitalis* 2.5
Extr. *Hyoscyami sicci* 1.0
Extr. *Hyoscyami* 20.0
M. fiant pilulæ numero 50.

℞ Rad. *Rhei* 10.0
Extr. *Gentianæ* 20.0
M. f. pil. pond. 0.15.

℞ Extr. *Gentianæ* 20.0
Rad. *Althææ pulv.* 1.5
Terendo exacte mixtis adde
Rad. *Rhei* 10.0
Rad. *Gentianæ pulv.* q. s. (1.5)
Fiant pilulæ No. 200.

℞ *Quininæ Sulphatis* 2.5
Pulveris *Aromatici* 5.0
Extracti *Trifolii* 2.5
M. f. pil. 100. Consperg. cassia cinnam. pulv. D. S.

℞ *Quininæ Sulphatis* 2.5
Pulveris *Aromatici* 5.0
Extracti *Trifolii* 2.5
Rad. *Althææ pulv.* 0.5
Glycerini,
Aque destill. ana gtt. 15
M. f. pil. 100, etc.

℞ Extr. *Calombæ*,
Fellis *Tauri dep.*,
Rad. *Rhei pulv.* āā 5.0
Ligni *Quassæ* q. s.
Fiant pil. No. 150. Consperg. Cass. Cinn. pulv. D. ad vitrum.

℞ Extr. *Calombæ (sicci)*,
Fellis *Tauri dep. sicci*,
Rad. *Rhei pulv.* āā 5.0
Rad. *Althææ pulv.* 1.0
Glycerinæ,
Aque dest. ana 2.0 (vel q. s.)
Fiant pil. No. 150, etc.

The physician believed that the Colombo extract and the *Fel Tauri depuratum* were of a slimy consistency; the *Lignum Quassia* is introduced only as a constituent, and could be advantageously replaced by some althæa powder, or even by water. The althæa powder might be omitted. Still, it prevents the ox gall from absorbing moisture from the air.

℞ *Quininæ Sulphatis* 2.5
Extracti *Gentianæ* q. s.
M. f. pil. No. 50. Consperge *Lycopodio*.
D. S. Ten pills every morning and evening.

℞ *Quininæ Sulphatis* 2.5
Extracti *Gentianæ* 2.0
Rad. *Gentian pulv.*,
Rad. *Althææ* ana 0.5
Glycerinæ dilutæ gtt. 10.

Sulphate of quinine, with gentian and other similar extracts, shows a certain plasticity after compounding, but the mass crumbles on being rolled. If some acid (10 drops of dilute sulphuric acid, or 5 drops of muriatic acid to 1.0 Gm. or 15 gr. quin. sulph.) is added with a little althæa powder, the mass at once attains the required plasticity. If it be a rule that quin. sulph. be invariably dissolved by the addition of an acid to mixtures, the same rule makes this solvent addition equally justifiable when the drug enters into pill masses.

NOTE.—[We have mentioned above that this is not proper. If the quinine salt is not specially directed to be dissolved in mixtures, it should be only mechanically suspended.]

PILL MASSES WITH SOAP POWDERS.

Soap powder yields the best pill masses in combination with vegetable powders, extracts, resins, and gums. Of course, acid salts or acids and tannic preparations are prone to deprive them of this quality, as can be very easily understood. In using them, care must be taken that they do not come into contact with too much moisture. A mixture of soaps and extracts with powders may appear somewhat dry and brittle when first kneading the mass, and so much so as to create the impression that a little more water or extract might be necessary. Great care must be taken in this regard, however, as continued kneading

* [This statement is altogether wrong. The article in question is of great utility in certain cases; see below.]

of the mixture may render it too soft, and an inert constituent may be required, thus unnecessarily increasing the weight of the pill-mass. It would be improper to throw away the excess in such cases, and it behooves honest compounders to make up the mass again if the pills are too large. Half of the soft pill-mass should be taken and mixed with half of forementioned dry ingredients. It is quite immaterial if the pills are somewhat larger on account of this excess. A few drops of the dilute spirits of wine (*spiritus vini dilutus*) will make the soap solution a great deal softer and more pliable than water could, and for this reason the addition must be made with much more care. Example:

	Gm.	gr.
℞ Rhei pulv.....	6	90
Ext. Taraxaci.....	6	90
Ext. Trifolii.....	6	90
Saponis.....	6	90

Make pills each weighing 0.15 Gm. (2½ gr.).

	Gm.	gr.
℞ Rhei pulv	6	90
Ext. Taraxaci.....	3	45
Ext. Trifolii.....	6	90
Saponis.....	6	90
Tragacanthæ.....	q.s.	q.s.

Make 60 pills.

In this last instance the weight of the mass of extract is excessive, and it would have the consistency of an ointment. Therefore the Radix Rhei, the *Extractum Trifolii*, and the soap should be first added in the above quantities, but only one-half the weight of the extract of dandelion, which is really the least efficacious of the ingredients, and the other half should be substituted by tragacanth. If the prescription were followed to the letter, a mass would be obtained which will yield 160 pills, each weighing at least 0.3 Gm.

	Gm.	gr.
℞ Aloes.....	2.5	38
Extr. Rhei.....	5.0	75
Extr. Hellebori Viridis.....	1.5	24
Saponis.....	1.5	24

Make 100 pills.

	Gm.	gr.
℞ Aloes.....	2.5	38
Extr. Rhei (sicci).....	5.0	75
Extr. Hellebori Viridis.....	1.5	24
Saponis.....	1.5	24
Althæa pulv.....	1.0	16
Glycerin dil.....	gtt. 15	gtt. 15

Make 100 pills.

PILL-MASSSES CONTAINING GUM-RESINS AND RESINS.

Gum-resins and resins should always be used in a very finely powdered state. As they adhere firmly to the mortar and the pestle in compounding, these should be rubbed with a little paper dipped in almond oil. Resinous powders compounded with a few drops of spirits of wine are generally serviceable, and keep their shape, but not so in the possession of the patient. This, however, does not recommend them to the dispenser who understands his art.

Most gum-resins and resins, especially aloes, require a slight addition of vegetable powder—*althæa* root, for instance. *Asafoetida* will yield a pill-mass with a few drops of weak spirits of wine, from which tenable pills can be formed. Alcohol must not be added to aloes when this is inferior in proportion to the accompanying powder or the mucilaginous substances, as pills prepared with them have a tendency to flatten.

Care should also be taken not to add too much spirits of wine when compounding resins, especially if any soap powder is added. Sometimes the mixture would seem to require an addition of spirits of wine, but the dispenser must not be led astray by this appearance. Prolonged kneading is requisite as the mass becomes more plastic, while any further addition of

spirits of wine would only have made the mass too soft.

These pill-masses should always turn out firm on account of the above-mentioned reasons. Dilute spirits of wine, or even spirits of soap, should be used with gum resins, and 90 per cent spirits (about 5 to 6 drops to the 10.0 Gm.) for resins when the mass consists of resinous substances only, as these powdered ingredients produce good pill-masses with a watery extract and vegetable powder. A resinous pill-mass can be easily kept from crumbling by the addition of a few drops of spirits of wine, or even by a very small addition of soap powder, excepting, of course, with metallic or earthy salts. It happens very often in summer that the consistency of the gum resins is such that they can hardly be finely powdered. In such cases they must be made kneadable, slightly warming them in a water-bath.

PILL MASSES CONTAINING FLUID OR SOFT RESINS, FLUID BALSAMS, OILS, AND FATS.

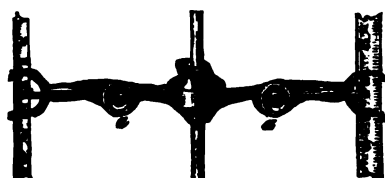
If the proportion ordered of the above is too great to form a suitable mass with the powders to be added, of which they require but a small quan-



Fig. 1.

Rüdorff's portable sand-bath.

[See p. 205.]



Hugerhoff's burette holder.

[See p. 205.]

tity, recourse must be had to wax. *Balsamum Copaivæ*, *Balsamum Peruvianum*, *Unguentum Hydrargyri*, *Extr. Cubebe*, Oleoresin of Male Fern, and similar ones, also *Creasotum*, *Acidum Carbolicum*, and *Olea Ætherea*, with a third to as much wax melted together at a gentle heat, produce very good masses, but such a wax mixture should be perfectly cooled before it is mixed with the other ingredient. The opposite results from an endeavor to render these wax mixtures plastic by the addition of ether, spirits of wine, etc. The wax is melted in a small porcelain pan and not in the pill mortar, the thick bottom of which requires a higher temperature, and therefore cools off more slowly. The dispenser of the medicines must use every precaution not to modify the efficacy of the medicines by any of his manipulations. If the ingredients are too strongly heated, they will lose a portion of their most efficacious constituents. Only yellow wax is used in such mixtures. The wax is first melted at a gentle heat; then mixed with an equal weight of the balsam, and only shortly before resumption of its solid form the other balsamic ingredients should be added. Balsams should never be mixed with calcined magnesia, gum arabic, or powdered

pine resin, unless specially ordered by the physician. An addition of wax, if but in small quantities, is always advisable, even if the constituent powder were sufficient, as the mass will be the better thereby, and the pills more easily formed. Example:

	Gm.	gr.
℞ Bals. Copaivæ.....	25.0	400
Cubebæ pulv.....	q.s.	q.s.

M. ut fiat pilulæ No. 500.

12.5 Gm. (200 grains) of yellow wax is melted with 10.0 Gm. (150 grains) of the balsam, and mixed with the remaining 15.0 Gm. (225 grains) previous to cooling. When the mass is completely cooled, it is converted into a pill mass by the admixture of the requisite quantity (2 ⅓) (60 Gm.) of cubeb powder.

In many drug stores where copaiva pills have to be frequently put up, a preparation (*Balsamum Copaivæ ceratum*) is kept in stock consisting of two parts Balsam Copaiva, and 1 part *Cera flava*. Three parts of this mixture require five parts of the Cubeb powder to form a pill mass. The Balsam of Copaiva may be given more consistency by the addition of calcined magnesia, with which it forms a saponaceous combination at the same time. This process, however, is accomplished slowly, and does not allow the pills to be made before the lapse of from twenty-four to forty-eight hours. If the mixture is slightly warmed and a few grammes of water are added to it, the desired consistency of the mass is attained sooner. [Such a preparation is official in the U. S. Pharmacopœia under the title of "Massa Copaiba."]

It is preferable, however, to keep on hand *Balsamum Copaivæ Magnesia Solidificatum*, and especially so as this preparation, kept in tightly closed porcelain vessels, is not liable to deterioration. 100.0 Gm. of balsam are mixed with 45 Gm. of calcined magnesia, and 5.0 Gm. of water, and the mass heated for an hour at a digestion heat of 50° (122° F.), and after being well stirred, laid aside during ten days, after which time it has become so consistent, that it can usually be converted into a mass with something less of the same quantity of powdered cubebs. The proportions above indicated are the ones usually observed, as a mixture of 100.0 Gm. copaiva balsam, 10.0 Gm. calcined magnesia, and 5.0 Gm. of water also yield a solidified balsam after the lapse of two to four weeks.

The following drugs, with from one to two parts of melted *Cera flava*, and mixed with four or five parts of dry organic powders, give very good pill masses when thoroughly cooled.

Carbolic Acid.	Coal Tar.
Apiol.	Croton Oil.
Camphor.	Petroleum.
Coniine.	Ol. Myristicæ Æth.
Oleoresin of Male Fern.	Ol. Nucistæ.
Creasote.	Oil of Tar.
Nicotine.	Propylamine Tri-methylamine.
Tar.	

When the physician allows the dispenser to select the constituent, or when an inert one is prescribed, he will do well to use *Cera Flava*, which is a very inoffensive drug.

If a vegetable powder is added to a balsam or oily mixture, and the powder contains moisture, the pills may crumble after all. To avoid this, the vegetable powders should first be dried at a gentle heat in the steam bath, or the humidity should be first absorbed by some tragacanth powder. Etheral oils, *Olea Ætherea*, offer no great obstacles to the formation of a good mass. If large quantities are to be added, they are first mixed with as much wax, which is liquefied in a small porcelain vessel, or made into a doughy mass with

powdered resin to which some vegetable powder is added. If gum resins or resins are to enter the preparation, they are to be mixed with it without any addition of colophonium or wax. The mixture of the ethereal oils and wax can also be made, heating them in a test-tube. It can be easily poured out after heating the external surface of the tube.

(To be continued.)

Apomorphine Muriate.

A PATIENT having complained of symptoms of sickness following the administration of a solution of morphine which was eleven months old, Dr. Hager, after applying some inconclusive tests, decided that the solution must contain apomorphine, and, therefore, that no solution of morphine muriate (hydrochloride) ought to be used medicinally which is more than a month old. Mr. Dott having in his possession a solution of morphine hydrochloride, which was exactly five years old, submitted it to chemical examination, and found not a trace of apomorphine. There is, therefore, no evidence (nor the least likelihood) that apomorphine is produced in solutions of morphine salts "by keeping."

As regards the tests for apomorphine, it was ascertained that the deep-green color developed by oxidation in a neutral or faintly alkaline solution is the most delicate and characteristic reaction. The coloration is quite distinct with 1 part of hydrochloride in 100,000 of water. The best method of applying the test is to render the solution (placed in a porcelain basin) just perceptibly alkaline with bicarbonate of potassium, when, in the course of a few minutes, the green color will be perceptible if apomorphine is present.

The solubility of apomorphine hydrochloride is 1 part in 50 of water at ordinary temperatures.—*Chem. and Drugg.*

Urethan as a Narcotic and Soporific.*

URETHAN is another name for the ethyl ether of carbamic acid, which latter may be regarded as one of the derivatives of urea. Carbamic acid ($\text{CH}_3\text{NO}_2=\text{NH}_2\text{CO.OH}$) does not exist in a free state, but some of its salts occur in the serum of dog's blood. Carbamate of ammonium is familiar to pharmacists by reason of its forming a constituent of carbonate of ammonium. Whenever ammonia and carbonic acid, either dry or moist, come together, some of this salt is formed. Urethan is carbamate of ethyl, $\text{C}_2\text{H}_5\text{NO}_2=\text{NH}_2\text{CO.C}_2\text{H}_5$. It may be obtained in various ways, as, for instance, by passing cyanic acid into alcohol; or by heating nitrate of urea with absolute alcohol to 120–130° C., or by acting with ammonia upon ethyl carbonate. It forms colorless prismatic crystals or scales, having a faintly aromatic odor, and a cooling, faintly aromatic taste. It is easily soluble in water and in alcohol, also in ether and chloroform. Its aqueous solution is perfectly neutral. At 50° C. it melts to a clear, colorless liquid. At 180° C. it boils, and when ignited on platinum, it takes fire and is completely dissipated. When heated with ammonia, in a sealed tube, to 180° C., it is converted into urea and alcohol. When taken internally, it is also eliminated as urea.

Dr. R. Kobert of the University of Strassburg, in the beginning of the present year, requested Dr. R. v. Jaksch, of Vienna, to make clinical experiments with urethan, which had been ascertained to possess narcotic and

soporific properties by Schmideberg in and Jolly, in Strassburg. But, though the compound had been known to chemists for many years, none could at first be obtained in the market, until finally Merck, of Darmstadt, undertook its preparation. Special apparatus had to be constructed for making it, and the first considerable instalment received by Dr. Jaksch amounted to 200 Gms. (a little over 6 oz.). The price charged for this was \$18.48, but this is, of course, no criterion for its ultimate market-price, should it become an important remedial agent, which is predicted by Dr. Kobert.

Regarding the physiological effects of the substance, Dr. Jaksch found it to act (in 20 cases) so promptly and so free from secondary effects, that an important future may be anticipated for the drug. One of its great advantages, particularly over paraldehyde, is this that it is easily taken and borne by patients.

Further reports are expected shortly.



BUTTERFIELD'S IMPROVED FUNNEL STRAINER.

THE accompanying illustration represents one of the most simple, yet durable and convenient, improvements for use by apothecaries, as well as in the household, for straining liquids, that has come under our notice for some time.

The strainer is, by preference, made of wire cloth rolled into conical, tubular shape to fit tightly in funnel tubes of different sizes. The upper or larger end of the strainer is closed by a metal cap, which is provided with a ring or knob by which the strainer may be conveniently handled when not in use. The lower end of strainer is open, and provided with a metal thimble which protects the wire cloth from wear, and fits snugly into the funnel-tube, so that no liquid can pass out of the funnel without first passing through the strainer. Ordinarily it is about five inches long, an inch in diameter at the larger end, and tapers gradually to a very small circumference. There are several sizes. Any further particulars may be had by addressing the inventor, Mr. F. O. Butterfield, No. 6 Vine street, Lynn, Mass., who has very recently been granted a patent.

Impurity of Commercial Amyl Nitrite.

MR. A. H. ALLEN has reported that three samples of amyl nitrite obtained from well-known houses contained only about 80% of real amyl nitrite, while a sample prepared in a less perfect manner contained less than 50% of the active constituent. Further examination showed also that a solution of amyl nitrite in alcohol deteriorates very rapidly. A sample which yielded 36 C.c. of gas on Aug. 18th, gave only 15 C.c. on Sept. 7th.—*Chem. and Drugg.*, Sept. 15th.

Toothache Cure.

A. GAUDET makes a report on a preparation which has come under his notice, in form of a sample in the possession of a female customer, who praised it greatly. He succeeded, after numerous trials, in ascertaining its composition, which is as follows:

Mastic, tears..... 8 parts.
Balsam Peru..... 5 "
Chloroform..... 14 "

Dissolve the mastic in the chloroform, then add the balsam. After twelve or fifteen hours, filter. For use, place two or three drops upon a small pellet of cotton, which is to be introduced into the cavity of the hollow tooth.

Ointment for Freckles.

ACCORDING to Dr. Ch. Heitzmann, the ointment for freckles recommended by Wertheim, of Vienna, consists of:

White Precipitate,
Subnitrate of Bismuth,
of each 1 drachm.
Glycerin Ointment..... 1 ounce.

This is to be applied in a thin layer on alternate nights, and is followed by satisfactory results in a month or six weeks.

Gelatinized Benzin.

GELATINIZED benzin is prepared as follows: 120 parts white soap are dissolved in a liter bottle in 180 parts hot water, 30 parts spirits of ammonia added, and the whole brought, with water, to $\frac{1}{4}$ lit., then filled up with benzin, and well shaken through. One teaspoonful of this solution is mixed in a $\frac{1}{4}$ liter bottle with a little benzin; when well mixed, the bottle is gradually filled, under continued shaking, with benzin. With this gelatin any stains may be removed without injury to the most delicate colors. The gelatinized benzin volatilizes with difficulty.

"Mosquito Oil."

Ol. Picis liquidæ..... 3 i.
Ol. Olivæ..... 3 i.
Ol. Menth. puleg..... 3 ss.
Spt. Camph..... 3 ss.
Glycerini..... 3 ss.
Acid. carbolicæ..... 3 ij.

Shake well together.

ANOTHER.

The Angler vouches for a mixture which, it says, is effectual in protecting from the attacks of mosquitoes:

Olive oil 3 parts.
Oil of pennyroyal..... 2 "
Glycerin..... 1 part.
Water of ammonia..... 1

To be mixed and shaken before applying to the face and hands. Avoid getting the mixture in the eyes.

Mixture for Whooping Cough.

Tinct. Belladonnæ..... 3 v.
Tinct. Valerianæ..... 3 v.
Tinct. Digitalis..... 3 gr. lxxv.

For a child two years old, begin with five drops daily; increase by five drops daily, until the dose reaches thirty drops. For older children the initial dose and increase *per diem* may be 10 drops. Tr. of musk may be used in the place of valerian when the latter is not tolerated.—H. ROGER, in *Union médicale*.

Formula for Terpene.

Terpene..... 3 iss. (by weight).
Alcohol (85%) ... $\frac{3}{4}$ v.
Water $\frac{3}{4}$ iss.

Two teaspoonfuls daily in divided doses, with meals.—GERMAIN SÉE in *Rev. méd. Franç. et étran.*

* From a paper by E. Ghillany published in the *Zeitsch. d. Oesterr. Apotheker Vereins*, 1885, No. 24, supplemented by some notes of our own.—*Ed. Am. Drugg.*

SALT IN ORNAMENTATION.

C. F. HOLDER (in *Sci. Amer.*) says, in speaking of the curious mineral incrustations derived from the springs of the Yellowstone Park, that without going as far, very beautiful decorative effects can be produced by placing a little salt and water in a glass (or other convenient vessel). After a day or two a slight mist will be seen upon the glass which will grow hourly, until the glass will shortly present the appearance shown in the illustration, the glass being enlarged to twice its thickness, by the deposit of beautiful salt crystals. A dish must be placed below the glass to limit the "creeping" tendency of the crystals. By the introduction of colored inks, any desired shade of crystals can be obtained.

[See page 208 for illustration.]

BURETTE HOLDER.

A NEW burette holder, so constructed that the graduation of the burette is not covered by it, has been devised by Franz Hagershoff of Leipzig. It has the additional advantage that the burette may be easily removed from or put back into the clamp. It may be had either with one or with two arms.

—*Chem. Centralbl.*, No. 30.

[See illustration on page 208.]

PORTABLE SAND-BATHS.

THE accompanying illustrations represent a form of portable sand-baths, devised by Prof. Rüdorff, and made in two sizes, the heating surface of the smaller one being 10x6½ inches, that of the larger 26½x6½ inches. Heat is applied by means of a coil of gas pipe, perforated at suitable distances. Both ends of the pipe are provided with adjustable fittings, but so that one end is closed while the other is open, and is connected with the supply of gas, the fitting at this end being provided with suitable inlets for air to mingle with the gas. The coil of pipe may be raised or lowered, and fastened at any height in the stirrups through which it passes, whereby the temperature may be graduated.—*Chem. Zeit.*, No. 67.

[See illustration on page 208.]

A New Method Detecting Oil of Turpentine in Essential Oils, Balsams, etc.

A NEW work by Dr. Hermann Hager has just come to hand, the title of which, translated into English, is: *Chemical Reactions for the Detection of Oil of Turpentine in Ethereal Oils, Balsams, etc.* For Chemists, Apothecaries, Druggists, and Manufacturers of Ethereal Oils.* Dr. Hager finding himself, in February, 1885, in the unwonted enjoyment of literary leisure, took up the subject of the detection of oil of turpentine in essential oils, which he had repeatedly studied without finding any reliable methods. After forty days of continued and useless labor, he happened to bethink himself of a peculiar behavior of ethereal oils towards resins, but no tangible results were obtained even then, until he happened to experiment with resin of guaiac, which finally turned out to be the key to the mystery. The result of his experiments is laid down in the work above quoted, and any one who wishes to obtain a full insight into the method and its practical application should be in possession of the original. For those who cannot obtain or make use of it, the following abstract will be serviceable.

The guaiac reaction is based upon the behavior of many essential oils towards oil of turpentine, in stimulating or starting the ozonizing power of the latter. There are, however, many other essential oils which possess this power but feebly or lack it altogether.

In a general way—omitting details for the present—the behavior of an essential oil towards resin of guaiac in presence or in absence of oil of turpentine, is shown by the following reactions:

1. *In absence of oil of turpentine.* Put a small pinch of freshly powdered resin of guaiac into a test-tube (A), add 1 C.c. (or 25 drops) of oil of spike lavender, and heat to near boiling, then remove the test-tube, so that the undissolved resin may settle. The oil will then be observed to have a yellow color.

2. *In presence of oil of turpentine.* Put a small pinch of freshly powdered resin of guaiac into a test-tube (B), add 1 C.c. (or 25 drops) of oil of spike lavender and 5 drops of rectified oil of turpentine, then boil or heat to near boiling, and remove the test-tube as before. The oil will then be found to have a deep violet tint.

The tint of the oil may often be better observed by adding to the oil, after heating, 1 to 2 C.c. of chloroform, amyl alcohol, absolute ethyl alcohol, benzol, etc. In many cases the oil may be diluted before boiling.

Rectified oil of turpentine, when boiled alone with resin of guaiac and alcohol, acquires only a yellow color. Or when boiled with resin of guaiac alone, it remains almost colorless, and does not become strongly yellow, nor does it show any color after cooling.

The oil of spike, therefore, which was present in the above reaction (No. 2), exerted a peculiar action upon the oil of turpentine, which Dr. Hager assumes to be an ozonizing one, and in consequence thereof the violet tint appeared.

While oil of spike is thus able to bring about this reaction, there are many other oils which fail to produce it. In order, therefore, to show the presence of oil of turpentine in such oils, it becomes necessary to add to them a small proportion of some oil which possesses the ozonizing power.

For the purpose of studying or carrying out these reactions, essential oils may be divided into three classes:

1. Oils which themselves are inclined to produce ozone. The most prominent of these is oil of turpentine, particularly when rectified. This property is possessed in a less degree by oil of tansy, rue, juniper berries, santonica, and those of several mints. Dr. Hager calls these "Ozonoprothym-Oele" (= "oils inclined to produce ozone"). It might be permissible to employ the term "ozonogenic oils" in English.

2. Oils which themselves are not "ozonogenic," but are capable of exciting the ozonogenic power in oil of turpentine, particularly with the aid of heat, causing the latter to color resin of guaiac blue or violet. Dr. Hager calls these oils "Stimulatoren," that is, "stimulatory oils." Such oils are many varieties of oil of citronella, spike, calamus, cedar wood, etc. Whether an oil is strongly stimulatory or only feebly so, is ascertained as follows: Boil a pinch of resin of guaiac with a few drops of alcohol, add 1 C.c. of oil of turpentine, and then add a few drops of the respective oil. If a dark violet color appears at once, the oil is strongly stimulatory. If it needs to be warmed or boiled to produce the tint, it is feebly stimulatory.

Some of these stimulatory oils must be kept on hand for carrying out the reaction. Dr. Hager found that some commercial oil of calamus is stimulatory; this variety he calls *Oleum Calami normale*. He also found commercial oil of citronella to have

this property in a high degree, and recommends it for this purpose. As feebly stimulatory he recommends oil of cedar, santal, and spike. Of course, before any such oil can be placed among the stock of reagents, it must be shown, itself, to be free from oil of turpentine, which is proved by its producing no violet or blue tint when heated with resin of guaiac alone.

3. Oils which behave indifferent when brought in contact with resin of guaiac and oil of turpentine. Dr. Hager calls these "Adiaphoren." "Indifferent" or "Non-ozonizing Oils" might be a suitable English term.

Sometimes different brands of one and the same oil were found to belong to different classes; and rectified oils usually showed a different behavior from the natural oils. The fact is, each oil must be studied by itself, and Dr. Hager himself states that much more extended researches are necessary to clear up every point. Yet he has already brought forward such an array of analytical proofs of the reliability of the new method, giving in detail the reactions obtained with more than 100 essential oils, that its great utility is even now amply demonstrated.

As it has been stated above, the presence of oil of turpentine in the stimulatory oils is very easily detected. In the non-ozonizing oils it is also readily discovered by adding a little of a stimulatory oil. Somewhat more difficult, however, is the detection of oil of turpentine in the ozonogenic oils (oil of turpentine being itself, of course, excepted). These latter oils require some modification of the test in order to distinguish between the pure oil and that containing turpentine. In such cases recourse may be had to some oils which are "antiozonoprothym," that is, which neutralize the ozonizing power, like some varieties of oil mace. Or feebly stimulatory oils may be added, and the solution diluted with petroleum benzin, either alone or mixed with other liquids. When petroleum benzin is used, boiling is always necessary. On the other hand, boiling is generally to be avoided in the case of the ozonogenic oils, when diluted with benzol, chloroform, or alcohol.

To carry out the reaction, the following reagents and apparatus are necessary.

1. *Crude Resin of Guaiac*, in pieces. If purified by alcohol, or kept for some time in powder, it is useless. The proper quantity needed for a set of experiments not extending over more than two days may be rubbed to powder, and must be kept from sun-light. It is best, however, to powder a little separately for each test. The powder should have a grayish-white color. A pinch of it, mixed with 1 C.c. each of oil of turpentine and absolute alcohol, should not acquire a violet tint, not even on boiling; the solution should be merely yellow. The amount to be used for each test is about 2-2½ grains (0.12 to 0.15 Gm.). To save space, we shall call this reagent hereafter simply "guaiac."

2. *Rectified Oil of Turpentine*.—This should not be old, perfectly limpid (and therefore not hydrated), and should not have been in contact with wood. Old or hydrated oil becomes bluish with alcohol and guaiac. Its proper condition is tested by heating it with alcohol and guaiac, as stated above. We shall designate this reagent by the abbreviation "Turp."

3. *Two or three Stimulatory Oils*, a strong one, say oil of citronella, and a weak one, say oil of spike, oil of cedar, and oil of santal. How their power should be tested has been mentioned before.

4. *Some Diluents*, either to enable the operator better to recognize the tint of the liquid, or to facilitate the solution of the guaiac and oil. Such

* *Chemische Reactionen zum Nachweise des Terpentinöls in den ätherischen Ölen in Balsamen, etc.* Fbr Chemiker, Apotheker, Drogisten, und Fabrikanten ätherischer Öle. Von Dr. Hermann Hager. 8vo, Berlin (Springer), 1885, pp. 166.

diluents are: anhydrous alcohol, chloroform, amyl alcohol, benzol, petroleum-benzin.

5. A *Dropping Glass* for absolute alcohol.

6. *Narrow Test-tubes*, about $\frac{1}{8}$ inch wide and at least 4 inches long. They must be perfectly dry inside, to prevent the powdered guaiac from adhering to the sides, when poured in.

7. A *small Porcelain Mortar*, glazed inside.

8. A *Petroleum Lamp* with circular burner. As it is often dangerous to heat volatile, inflammable liquids to boiling over a naked flame, Dr. Hager strongly recommends holding the test-tubes over the chimney of a petroleum lamp, best so that both test-tubes are held obliquely over it at the same time, in order to expose them to the same conditions. If a naked flame must be used, longer test-tubes (ab. $\frac{1}{8}$ inch wide and about 6' long) should be used.

Whenever "guaiac" alone is mentioned hereafter, a quantity of about 2 or 2½ grains of the freshly-prepared powder is meant. When any liquids are mentioned, and no other quantities are specially directed, 1 cubic centimeter (ab. 16 minims) is understood in each case. In most cases the liquids may be taken by drops, 1 C.c. being about equal to 24 large or to 30 small drops.

The reaction itself is performed as follows:

Take two of the test-tubes, of which one should be marked with a diamond or with ink (made lasting by holding over a flame). Both are grasped between the thumb and index-finger of the left hand, and powdered guaiac placed in both. 10 to 20 drops of abs. alcohol are then added to each (an equal amount to each), and afterwards the oil. Or the oil may be added directly to the guaiac. Into the test-tube provided with a mark (which we shall always designate, after Dr. Hager, with *B*, while the other will be meant by *A*), 3 or 4 drops less of the oil to be tested are added, next 4 large or 5 small drops of Turp. are poured in, so that both test-tubes contain equal volumes of liquid. If any diluent is added, an amount of about 1 C.c. is used.

In the case of highly expensive oils, half the quantities of the reagents and proportionately smaller test-tubes may be used.

As the various diluents, in the case of many oils, do not always behave alike, it is best, when repeating the test on one and the same oil, to vary the diluent each time.

The relative quantities of the reagents and other ingredients which may be used under different circumstances are the following:

TEST-TUBE.	GUAIAC. Grains.	ABS. ALC.* Drops.	ESS. OIL. Drops.	TURP.* Drops.	DILUENT.* Drops.	STIM. OIL. Drops.
I. A	ab. 2	10-20	28-30	0	30	1-5-10
B	ab. 2	10-20	24-26	4-5	30	1-5-10
II. A	ab. 1	8-15	14-15	0	15	1-2-4
B	ab. 1	8-15	12-13	2-3	15	1-2-4
III. A	ab. $\frac{1}{2}$	20-30	6-7	0	0	1-2-3
B	ab. $\frac{1}{2}$	20-30	6-7	1-2	0	1-2-3
IV. A	ab. $\frac{1}{2}$	15-20	3-4	0	0	1-2
B	ab. $\frac{1}{2}$	15-20	3-4	1	0	1-2

* None of these liquids must have been in contact with wood.

In the case of very expensive oils, scheme III. or IV. will answer.

The test-tube containing the mixture of the oil and reagents without turpentine is designated by *A*; that containing, in addition, the turpentine, with *B*.

When it happens that mixtures containing "non-ozonizing" oils, in both test-tubes *A* and *B*, show a yellow color after boiling, and it becomes necessary to add a stimulatory oil (such as oil of citronella), this should be added only in single drops (1-2-3), if it is energetic. If no change of color occurs in *B* after 5 minutes, 1, 2, or 3

drops more of the stimulatory oil are added, or the mixture gently warmed (to 86°-104°-140° F.), until the color in *B* changes. This warming is done by placing the test-tube into a beaker containing a volume of water 1½ to 2 inches high, and standing on a layer of sand over a water-bath heated by a lamp. A thermometer should also be placed in the beaker. The heat is always continued until the contents of test-tube *B* (containing the added turp.) exhibit a change or darkening of color.

When boiling is prescribed, this is understood literally. When the liquid is covered with a foam about $\frac{1}{2}$ inch in height, it should be withdrawn from the flame. Sometimes a repeated boiling is of advantage.

When a diluent is needed, Dr. Hager prefers benzol. Benzin has the property of retarding the action of the ozonogenic oils, but, as it is a poor solvent of the guaiac, each C.c. of it should be diluted with 15-20 drops of abs. alcohol to obtain a clear liquid. Whenever the mixture of guaiac, oil, and diluent is turbid, abs. alcohol should be used, of which 15-20 drops will usually produce a clear solution.

When examining ozonogenic oils by the aid of stimulatory oils, the change of color produced in test-tube *B* is followed after one, two, or three minutes by a change of color in the test-tube *A* (to which no turp. had been added), although the liquid was free from turp. If this interval were not longer than 10-30 seconds, the presence of turp. would be indicated, unless the color in the two test-tubes varies considerably, as, for inst., carmine and bluish-violet, reddish-violet and blue. Such differences speak for the absence of turp. There are also some few cases in which the contents of *A* assume a dark, and those of *B* a lighter color. If these tints differ, the absence of turp. must be assumed in such cases likewise.

The results obtainable with one and the same oil may be varied in many ways. Either the oil may be directly boiled with the guaiac, or it may first be boiled with 10-20 drops of abs. alcohol, and the oil added to the hot or cold solution; after awhile, the boiling may be repeated. These apparently identical experiments often yield different results. Sometimes the choice of the diluent is of importance. When compelled to repeat a test with modifications, the diluent should be varied each time, or heat should be avoided, or some other previously used manipulation altered.

An essential condition in using this method of examination is to make each pair of tests (*A* and *B*) under equal conditions (the only difference being a

few drops of turp. in *B*) and at the same time.

When purchasing oils to be used as stimulators, samples of them should first be examined to ascertain their power, since commercial lots vary.

As an example of the practical application of the method, we select, from Dr. Hager's work, a portion of the section treating of *Oil of Lavender*.

I. *Oil of Lavender, finest* (old).—Mixture of oil and guaiac heated on water-bath to 140° C. *A* remains colorless, *B* becomes blue. On cooling, *A* is light-blue, *B* dark-blue. After addition of chloroform, *A* is light-blue,

B dark violet-blue. After an hour same color. On heating now again, *A* becomes yellowish, *B* very dark blue. This latter appearance is of importance, as it seems to show that oil of turpentine is absent, although the previous reaction appeared to show its presence. Hence the test is varied thus:

Guaiac, oil, and benzol are put into the test-tubes cold. After 5 minutes *B* acquires a blue tint, while *A* is yellow; in 15 minutes, *A* is yellow, *B* dark blue; after 15 minutes, a faint violet tint appears also in *A*, becoming gradually pale-blue, and in about 45 minutes dark-blue.

Comparing these results with those obtained with the next sample (and with several others described in detail by the author, but omitted here), the present sample probably contains a small quantity (not over 3 per cent) of oil of turpentine.

II. *Oleum Lavandulae* (old). Guaiac agitated with oil, result a turbid mixture. On boiling, *A* is yellowish, *B* green. After adding chloroform, *A* and *B* are yellow; after boiling, *A* and *B* are yellow, the latter a little deeper. After adding 10 drops abs. alcohol and boiling, *A* and *B* yellow and clear. Set aside for 7 hours: *A* yellow, *B* brownish-yellow. Again boiled, *A* remains yellow, *B* acquires violet tint, becoming dark-violet. This oil, therefore, is "stimulatory."

Reaction varied: Guaiac boiled with 15 drops abs. alcohol, oil, and benzol (1 C.c. each): *A* and *B* yellow. After adding 2 drops oil of citronella and heating to boiling, *A* yellow, *B* dark-blue, the tints being persistent.

These differences of color, in both of the above reactions, prove the total absence of oil of turpentine.

III. *Oleum Lavandulae* (old). Guaiac, oil, and chloroform, heated to 158° F., acquire a green tint. Set aside for 15 hours, *A* contains a yellow layer surmounted by a small (1.5 Mm. thick) bluish layer. In *B* the bluish layer is twice as high, the lower layer is yellow. On boiling, both *A* and *B* become dark-violet. Variations:

(a) Guaiac and oil set in the water-bath: at 185°-184° F., a greenish-yellow color; *A* and *B* are clear. After adding benzol, *A* is turbid, *B* clear and greenish; at 158°-167° F., both are bluish-violet, *A* is turbid, *B* clear; on boiling, *A* and *B* are dark-blue.

Oil of turpentine is therefore present. To make sure, the reaction is varied again in several ways:

(b) Guaiac, oil, and benzol are put into the test-tube (guaiac settling firmly on bottom). Heating to 140° F. produces bluish tint. Set aside for 15 hours, *A* and *B* are alike, each containing two layers, the upper one bluish, the lower yellow. On boiling, *A* is violet, with yellowish tint, *B* more bluish-violet.

(c) Guaiac boiled with 10 drops abs. alcohol; mixed with oil, amyl alcohol, and 3 drops of oil of citronella; then set aside. After an hour, both *A* and *B* equally greenish with violet tint.

(d) Guaiac and 15 drops abs. alcohol boiled; mixed with oil, benzol, and 5 drops of oil of citronella. *A* and *B* yellow, but *B* immediately acquires a violet tint and *A* follows in half a minute, both being dark-violet after 4 minutes.

This concurrent behavior in the four sets of reactions reveals, beyond a doubt, the presence of at least 10 per cent of oil of turpentine.

For further details regarding the application of the method we must refer the reader to the original.

Volatility of Iodoform.—Mr. D. B. Dott says that iodoform loses 0.016 per cent per hour when exposed to the air in a thin layer at ordinary temperatures. With the heat of a water-bath it loses 6.70 per cent in the hour.

A NEW SIPHON.

THE siphon here described has been devised by Bode and Wimpf for drawing acids, caustic liquids, etc. It has the advantage that it may be started by merely dipping the short end into the liquid and blowing into the opening at *h*. As will be seen from the cut, the shorter leg is inclosed within a wider tube, the lower end of which contains a small ball (*b*) which serves as stopper.

To start the siphon, the short leg is immersed in the liquid, and presently the latter will have risen inside to the same level at which it is in the vessel. The mouth is then applied to the orifice at *h*, and air blown in. The pressure of air on the column of liquid in the tube *c* will cause the ball *b* to fall into the orifice and to be firmly retained there. At the same time, the pressure will be communicated to the continuation of the column of liquid in the tube *d*, and liquid will begin to flow from the orifice *f*. Were the blowing of air into *h* continued, the effect would simply be that nearly all the liquid contained in the siphon would be blown out through *f*. It is, therefore, necessary to stop blowing as soon as the liquid begins to run from the long leg in a stream. The moment that no more air is blown in, and the pressure on the ball thereby removed, the latter will be sucked upwards and allow the liquid contained in the vessel to ascend the tube *d*.

If it is desired to interrupt the flow, without taking the siphon out of the liquid, it is only necessary to blow strongly into the opening *h* until the siphon is emptied. It may be started again as before.

The opening at *h* should be kept closed, except when air is to be blown in.

The lower figure shows the manner in which the siphon may be made a permanent attachment to vessels used for storing caustic or other liquids.

[To prevent accidents from a regurgitation of the liquid through the opening *h*, which, under peculiar conditions, may sometimes happen, it will be better to connect the orifice *h* by a stout rubber-tube with an empty bottle, and to blow air into the latter. Should any liquid accidentally regurgitate, it will be projected into the bottle instead of into the mouth. It is true that the form of apparatus here described is less liable to cause such an accident than most others, but the precaution we have given can do no harm. In the case of such siphons as are fixed *air-tight* into the neck of the vessel to be emptied, the risk of regurgitation is greatly augmented, and the interposition of an empty bottle highly to be recommended.—ED. AM. DRUGG.]

APPARATUS FOR GENERATING OXYGEN GAS.

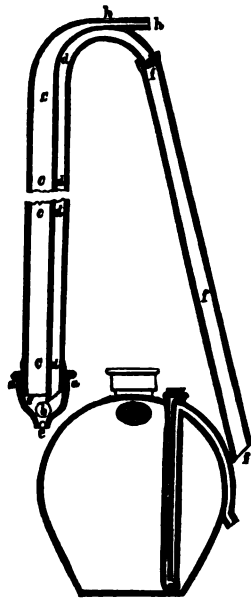
THE apparatus here described has been designed by Dr. Robert Muencke, of Berlin. It consists of an iron tube *A*, twelve inches long and one and a half inches internal diameter, closed at one end and open at the other. Near the closed end a smaller tube *b*, internal diameter five-sixteenths of an inch, forms the exit tube of the developed gas. The open end, after the interior has been filled half full of powdered chlorate of potassium, is closed by means of a cap and clamp. The inclosed salt is then evenly divided by shaking or tapping the tube, and heat applied by means of a sliding burner, beginning at the end closed by the cap.

This form of apparatus permits the employment of chlorate of potassium unmixed with other substances. It also enables the operator to interrupt the generation of gas at will, and to start it again at any moment.—*Chem. Zeit.*, No. 63.

Sublimated Serum and Albumen.

IN a paper by Mr. H. W. Jones relating his experience in using serum of horse blood in preparing antiseptic gauze, and its comparison with an egg-albumen of corresponding specific gravity, the following interesting points are noted:

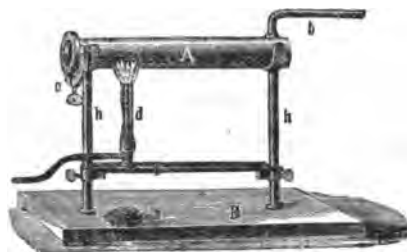
"The difference between the solubility of mercuric albuminate in horse-blood serum and in solution of egg-albumen depends probably on the different mode of combination of the albuminous matter with an alkali. By the addition of a small portion of



Bode & Wimpf's siphon.

potassium hydrate to a solution of egg-albumen, neutral potassium albuminate appears as a gelatinous precipitate, which dissolves in the excess of albumen on shaking, and a solution so prepared closely resembles serum of horse-blood in its reactions.

"A curious point in relation to the subject is the slowness with which mercuric albuminate precipitates from a solution of egg-albumen in presence of an excess of the latter, and shows that much reliance cannot be placed on albumen when used as an antidote



Muencke's Oxygen Generator.

in mercurial poisoning, beyond the fact of its acting as an emollient. To test this point, 100 C.c. was treated with 1 grain of mercuric chloride, and allowed to stand for fifteen minutes. It was then filtered rapidly under pressure. The precipitate, when dried, only weighed 1.84 gramme, and the clear filtrate ultimately deposited very considerably.

"Although a difference obviously exists between solution of albumen and serum of horse-blood, in the opinion of the writer this would not practically affect the substitution of one for the other, since the intention is to produce albuminate of mercury, which, *per se*, is soluble to a certain extent in all albuminous and saline fluids.

"For a convenient solution, one having a specific gravity of 1.020 is recommended, since it is strong enough for the preparation of the usual strength of gauze (1 to 100), and contains, in round numbers, seven per cent of al-

bumen. The same solution may also be used for the preparation of dusting-powder or ointment. Unless mixed with starch and air-dried, the albuminate forms a horny mass, which cannot be finely powdered. An ointment may be made by mixing the moist precipitate with simple ointment, or, better, a glycerite formed by using Glycerinum amyli in place of a fatty base. In any case, in preparing an ointment, sufficient albumen solution or serum must be used to completely combine with the mercuric chloride, and some means adopted for separating the precipitate from the watery portion."—*Chem. Drugg.*

Natural Camphor-Oil.

MR. JOHN MOSS reported a number of interesting facts respecting this substance, at the Brit. Pharm. Conference. The natural camphor-oil of Japan is imported in cases containing two square tins, like castor-oil tins, each holding forty pounds. Examination showed that the commercial oil is not always free from camphor gum. Specimens of the oil vary in color from colorless to black, the most common being pale straw-color. The specific gravity varies from .898 in the colorless to .990 in the very dark, and no two consecutive tins have the same specific gravity. These variations are probably due to a hap-hazard way of running it off into the vessels in which it is shipped, and the variable proportion of camphor it contains is similarly due to the different temperatures at which it is separated.—*Chem. and Drugg.*

Spurious Cubebs.

MESSRS. W. ELBORNE and H. Wilson lately undertook to discover the nature of the piperaceous fruit which has been found by Mr. Holmes and Mr. Kirby to be mixed with some samples of cubebs, and which produced bad effects, reported in the *Lancet* by Mr. B. Shillitoe. *Piper crassifolius* has been determined to be the adulterant, and a further examination demonstrated that it contained no tannin, but did contain an essential oil, resin, and a very bitter glucoside. Which of the latter cause the harmful effects has not yet been determined.—*Chem. and Drugg.*

Carbolic Acid as a Test for Nitrates.

ACCORDING to Hager, when a crystal of carbolic acid is placed into pure concentrated sulphuric acid, it at first floats, and ultimately dissolves without coloring the liquid. If the sulphuric acid contains a trace of nitric or nitrous acid, a coloration takes place which is red, brown, or green, according to the degree of contamination, but is always dark. If the sulphuric acid contains water, it is necessary to heat it to between 50° and 70° C.—*Pharm. Jour.*

Triethylamine, $N(C_2H_5)_3$, resembles the sulphate of sodium, sulphate of calcium, and caustic lime in its greater solubility in cold than in hot water. Its sensitiveness in this particular is so great that Dr. Guthrie proposes (*Lancet*, July 19th, 1885) to utilize this property as a means of taking the temperature of the human body. For this purpose, he suggests solutions, varying in strength from five to twelve per cent by weight in water, contained in hermetically sealed glass-bulbs. Upon being heated, these solutions become turbid, those containing most alkali requiring least heat. A ten-per-cent solution becomes turbid at 72° F., an eight-per-cent solution at 76° F., and a four-per-cent solution at about 107.6° F., so that these and intermediate proportions cover the limits of the range of temperature of the human body.—*Pharm. Jour.*

ESTIMATION OF NITROGEN IN ORGANIC SUBSTANCES.

As we have shown in several previous articles, the exact estimation of nitrogen in organic substances, which had previously been possible only by the more tedious operation of ignition with soda-lime, has been made one of the most simple chemical operations through Kjeldahl. All chemists who have carefully tested the process are agreed that it should supersede all other processes.

O. Reitmair and A. Stutzer, of Bonn, who have to make large numbers of nitrogen determinations, have now also adopted the method exclusively, and have, moreover, pointed out the best arrangements for carrying out a number of assays at one and the same time. We will give below the salient points of their paper.

The organic substance is decomposed in small glass flasks made of well annealed potash glass. For dry substances, the authors recommend flasks of 200 C.c. (7 fl. oz.) capacity. For liquid, such as milk, beer, wine, blood, etc., somewhat larger ones, of 250-300 C.c. (9 to 10 fl. oz.).

The weighed substance (not over 1 Gm., and if as much as about 10% of nitrogen is present, not more than 0.1 or 0.2 Gm.) having been put into the flask, about 0.7 Gm. of oxide of mercury (taken by guess) is added, which aids the decomposition, according to

and then 25 Gm. of a solution of sulphide of potassium (containing 40 Gm. in 1 liter); this is added for the purposes of precipitating the mercury as sulphide.

The preparation of the soda solution at first gave the authors some difficulty, as the ordinary soda is too impure and the chemically pure alkali too expensive. They finally found that E. Merck, of Darmstadt, furnished a sufficiently pure article, 100 kilos of which cost 110 mark, and this is the article they used.

During the heating of the organic substance with the sulphuric acid, the nitrogen of the former is converted into sulphate of ammonium, none of which is lost or escapes during the heating. All that is now required is to decompose this salt by an alkali (the soda solution above mentioned) and to distil the ammonia over into a known quantity of standard sulphuric acid, where it is finally determined by finding the quantity of sulphuric acid left unsaturated.

The authors employ for the distillation so-called Erlenmeyer flasks (Fig. 2), and prevent the spattering of any of the contents of the flask into the condensing tube, by the arrangement shown in the cut. The condenser is not to be cooled.

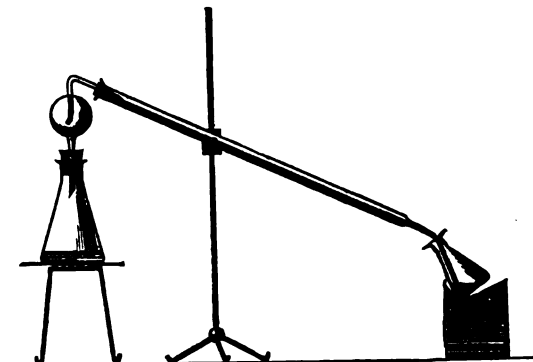
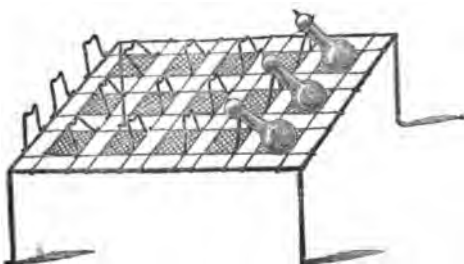
It consists of a tube, $\frac{1}{4}$ inch wide and 30 inch long, ending in a narrow bent tube which dips into the sulphuric acid contained in the receiver. The

Digest the iodine, iron wire, and water at a gentle heat until combination is complete, filter into the hypophosphorous acid, and add sufficient distilled water to make 8 fl. oz.

This will contain in each drachm 34.4 grains of ferrous iodide, FI., and, when added to simple syrup in the proportion of 1 part to 7 parts by measure, will form syrupus ferri iodidi of the Pharmacopœia strength as regards ferrous iodide.

N.B.—Care should be taken to ensure the purity of the hypophosphorous acid,* as much of that prepared by the usual process, viz., by decomposition of hypophosphite of calcium with oxalic acid, contains oxalic acid as an impurity. This formula, it was added, is merely a suggestion; the addition, however infinitesimal, should first be made known and recognized, and it should remain with the medical profession either to condemn or condone its usage.

The application of the acid to the preservation of other substances naturally prone to decomposition was also examined and found to be very effectual. With syrupus acid. hydriodic., ammonii iodidum, pil. ferri iodidi, ung. potas. iodid., and solutions of the protosalts of iron it is of great service. The decomposition of a solution of sulphate of iron is almost entirely prevented by its addition; this fact will doubtless be of service in photographic work, where solutions of ferrous sul-



Reitmair & Stutzer's apparatus for assaying nitrogen.

Wilfarth, but does not take part in the reaction—and then 20 C.c. of pure concentrated sulphuric acid. In the case of very fatty substances, a small piece of pure paraffin is added, which will effectually prevent excessive foaming.

Fuming sulphuric acid is *never* free from nitrogen, and therefore cannot be used here.

As recommended by Kreusler, the flask is closed with a loose round hollow glass-stopper drawn out to a point below. These hollow stoppers may be easily made out of a suitable piece of glass-tubing. The flask or flasks are then placed in a slanting position upon wire-gauze, being supported by a wire-frame upon which the necks rest. A thick layer of sand is placed on the table underneath, so that if one of the flasks should break, no serious damage would be done by the hot acid. There should be a good draft over the flasks.

The authors do *not* recommend to use a sand-bath, since the flasks, when heated upon sand, will soon be affected with fine scratches, and rapidly become useless. An ordinary Bunsen burner with wire-gauze cap (to prevent the flame from striking back) may be used.

At first a very gentle heat is applied; afterwards it is raised gradually to boiling and kept so until the liquid has become quite colorless. When cold, the contents are cautiously diluted with a copious amount of water, whereby any crystallized mercurial salt present is completely dissolved. The liquid is now rinsed into the distilling flask 120 to 140 C.c. of a soda solution of 30-32° B. added,

capacity of the whole tube is such that the contents of the beaker could never be aspirated back into the flask.—*Rep. d. Anal. Chem.*, 1885, No. 14.

A Permanent Solution of Ferrous Iodide.

MR. A. E. ROBINSON read a paper at the British Pharmaceutical Conference in which he recommended a mode of forming a permanent solution of ferrous iodide.

1. A solution of ferrous iodide eight times the strength of the official syrup could be almost indefinitely preserved in a stoppered bottle, occasionally opened for purposes of sale, etc., by the addition of aqueous hypophosphorous acid, equal in amount to only 1 per cent of the anhydrous acid H_3PO_3 .

2. The same solution containing 1 per cent of H_3PO_3 , if freely exposed to the air in a bottle, would keep perfectly for two months.

3. If on continued exposure the solution became decomposed, the further addition of a few minims of acid would restore it to its original grass-green color, and make a perfectly clear solution free from all deposit; this could be again repeated after further exposure resulting in decomposition.

The following formula was submitted as the outcome of these experiments:—

Iodine.....	1,804 grains
Iron wire.....	2 oz.
Distilled water.....	6 fl. oz.
Hypophosphorous acid (containing 20 per cent of H_3PO_3).....	3 fl. drachms

phate and oxalate are in constant requisition.—*Chem. and Druggist*.

Ginger Pop.

TAKE $5\frac{1}{2}$ gallons water, $\frac{1}{2}$ pound ginger root bruised, $\frac{1}{4}$ ounce tartaric acid, $2\frac{1}{2}$ pounds white sugar, white of 3 eggs well beaten, 1 small teaspoonful lemon oil, 1 gill yeast; boil the root for 30 minutes in 1 gallon of the water, strain off, and put the oil in while hot; mix. Make over night; in the morning skim and bottle, keeping out sediment.

Paraffin-Stoppers.

MR. KIRSTER, a German pharmacist, has recommended, in the *Pharmaceutische Zeitung*, the use of paraffin in place of corks or other stoppers for the hermetic sealing of bottles containing liquids which are prone to ferment or otherwise deteriorate by coming in contact with the air. This, he says, is particularly applicable to syrups or saccharine juices of all kinds. They are poured, while hot, into perfectly dry bottles, which are filled nearly up to the lip. They are then allowed to stand at rest until cold, during which time all air bubbles will rise to the surface. Finally, a small quantity of melted paraffin is poured over the top, where it forms a firm solid coat on cooling, about the tenth of an inch thick. Such a paraffin stopper is easily removed when the contents of the bottle are required for use, and by collecting the paraffin it can be used again.

*[For the preparation of pure hypophosphorous acid, see our remarks in *NEW REMEDIES* for 1883, page 281.—Ed. AM. DRUGGIST.]

THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 11. WHOLE No. 137

FRED'K A. CASTLE, M.D., - EDITOR
CHAS. RICE, Ph.D., ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

NOVEMBER, 1885.

SUBSCRIPTION PRICE per year, \$1.50
SINGLE COPIES, 15

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

The International Pharmacopœia.

ONE of the most important features of the late International Pharmaceutical Congress was the report of the International Pharmacopœia Committee and the discussions following the same. Since many of our readers may not remember the circumstances under which this committee was appointed, we shall briefly relate them.

Efforts to prepare an International Pharmacopœia have been made at every Pharmaceutical Congress since 1867, but, up to the present, no practical result had been obtained, though one draft was offered in 1874, which was, however, never completed.

At the last Congress, held at London in 1881, it was resolved to appoint a Committee of two Representatives from every country,* to which should be entrusted the task of elaborating such a work. A portion of the Committee

was elected by the Congress from among the members present, and the remainder were elected or appointed afterward by their respective countries. The Committee is composed of the following (with personal titles omitted):

A. V. Waldheim (Austria), *President*. A. Petit (France), J. Martenson (Russia), *Vice-Presidents*. R. Godefroy (Austria), *Secretary*.

Members:

Austria: A. V. Waldheim; J. Ditt- rich. *Belgium*: N. Gille; L. Cornelis. *Denmark*: G. Lotze; P. Madsen. *England*: J. Redwood; P. Squire. *France*: A. Petit; C. Méhu. *Germany*: C. Brunnengräber; C. Schacht. *Greece*: F. X. Landerer. *Hungary*: G. Jarmay; R. Egressi. *Ireland*: C. Tichborne; H. Draper. *Italy*: N. Sinimberghi; D. Vitale. *Netherlands*: Dr. Ankersmith; W. Stöder. *Norway*: G. Hansen; W. Walther. *Portugal*: J. J. Alvez; J. U. de Veiga. *Russia*: J. Martenson; E. Rennard. *Spain*: (two gentlemen whose names were illegible in the notice sent to the President). *Sweden*: W. Sebardt; L. Stahre. *United States*: J. M. Maisch; Ch. Rice.

After the committee had been completed, the President prepared a rough list of titles of drugs, chemicals and preparations, such as he thought might form the basis of an International Pharmacopœia, and sent them to the members of the Committee for criticism. On the basis of the notes thus submitted, he finally elaborated a draft which he presented at the late Congress.

It must be confessed that the appearance of this draft was a perfect surprise to the American members of the committee and probably to many others, who had no intimation whatever that anything of the kind was contemplated. It had been expected that, when the President had received all the criticisms of his draft from the different countries, a new circular would be issued combining all these documents, so that each member would have a better chance of surveying the whole draft and criticising the same. In our opinion, this would have expedited the object materially, as each member of the committee attending the congress at Brussels would have known all about the whole subject. Instead of this, Baron von Waldheim thought it advisable to elaborate, from the first notes received from the members, and with the aid of and reference to the different pharmacopœias,* a complete draft, to be submitted to the congress. We cannot blame Mr. von Waldheim for doing so, as he probably had sufficient reasons. On the contrary, we acknowledge that he has rendered very valuable services to the cause of pharmacopœial uniformity, by his laborious compilation.

It was, of course, not to be expected that this draft, unexamined and uncriticised by the other members, would be at once adopted *en bloc*. The only practical thing to do was to refer it back to the committee for discussion and further elaboration, and this was, in fact, done.

To give a complete reprint or translation of the draft in this paper would be at the present time unprofitable. We shall content ourselves with an account of the more salient features.

Right here we want to express our conviction that an international pharmacopœia, in the sense originally intended, is an impossibility, and impractical—at least for many years to come.

At one time, it was believed that all special national pharmacopœias could be done away with, and that one inter-

national code could take their place. This view was held by some very prominent organizers of the first Congresses, as we know from personal acquaintance. The majority of those, however, who took any interest in the matter contended themselves with the project of getting up an international work which should be official and recognized in all countries, *alongside* of the national pharmacopœia, and the introduction of which might gradually bring about greater uniformity in similar preparations of different countries. We must confess that we see more drawbacks in the existence, side by side, of two pharmacopœias than advantages. While we cannot, however, reconcile ourselves, for the present, to the first feature, we thoroughly approve of the second, viz., the bringing about international uniformity, and believe this to be by far the more important and really practical one. An international pharmacopœia should, *in the first place*, aim at establishing general norms, according to which the pharmacopœias of the different countries may be constructed, or to which they should gradually—yes, even very gradually—be approached. *In the second place*, an agreement should be arrived at, regarding the identity, quality, and strength of all powerful crude drugs and of such chemicals only as are not fully defined by the mere name; likewise regarding the strength of the different classes of pharmaceutical preparations (if this be possible); and particularly regarding the strength of the preparations of potent drugs. And lastly, some uniform rules regulating the nomenclature should be established.

That a *unanimous* vote on all these points will ever be reached is highly improbable. However, if a gradual approach to uniformity is brought about, without depriving each pharmacopœia of its individuality (since each one ought to be adapted to its own special people and climate), a great advantage will have been gained. And to this end we are willing and anxious to contribute.

We shall now turn to the draft proposed by Baron von Waldheim, and first say a few words about its *nomenclature*. The author had much difficulty in selecting titles which might be supposed to be acceptable to all countries. The principal difficulty was presented by chemicals, for which three kinds of nomenclature are in vogue, in different pharmacopœias, namely: (a) the new scientific chemical nomenclature (example: *Ferrum sulphuricum*); (b) the English and American system (example: *Ferri sulphas*); (c) the system of Berzelius (example: *Sulphas ferrosus*). As it was deemed impracticable to give all the names of one and the same preparation in the different pharmacopœias, the author usually selected three, one from each of the above systems, and placed that which he considered in chief use first. He also added such synonyms as he considered necessary.

As it often happens that certain articles (preparations, etc.) contained in this draft have a title coinciding with that contained in one or another pharmacopœia, while the article or preparation *differs* in strength, it would become necessary, if this draft is finally adopted, to alter the strength of these articles in the several pharmacopœias, so as to render the preparation uniform with that of the international pharmacopœia. Or, if this is not done, the article understood by the international pharmacopœia should, at least, never be dispensed without it is clearly understood that it is actually intended.

Chemicals.—In our opinion there is no necessity whatever of including in an international pharmacopœia any chemicals of known and definite composition, such as the following, which

* All the latest editions were used, except in the case of the Spanish, the new edition of which, of the year 1884, has remained almost entirely unnoticed in pharmaceutical literature.

* Ireland and Hungary are separately represented.

are enumerated (with description and tests), in Mr. v. Waldheim's draft.*

Acidum arseniosum, — carbolicum, — chromicum, — salicylicum; Antimonii chloridum, — et Potassii tartras, — oxidum; Apomorphiæ hydrochloras; Argenti nitras (cryst.); Atropina; Atropinæ sulphas, — valerianas; Bismuthi subnitras; Bromum; Chloral; Codeina; Colchicina; Coniina; Creasotum; Cuprum ammoniatum; Ferri chloridum (cryst.); Hydrargyri chloridum corrosivum, — chloridum mite, — iodidum rubrum, — iodidum viride, — oxidum flavum, — oxidum rubrum; Iodoformum; Iodum; Morphina; Morphinæ acetas, — hydrochloras, — sulphas; Oleum sabinæ, — sinapis æthereum, — tigilii; Phosphorus; Plumbi acetas, — iodidum; Potassii bromidum, — iodidum; Santoninum; Sodii arsenias (cryst.); Strychnina; Strychninæ nitras, — sulphas; Sulphuris iodidum; Zinci acetas, — chloridum, — oxidum, — sulphas, — valerianas.

It is generally understood and provided for by the different pharmacopœias that all these, and many more definite chemicals should be of the highest degree of purity practically attainable. Hundreds of other chemical substances might be mentioned which would deserve to be included in the above list with equal justice. Is it likely that the chloral dispensed in Austria or in the Argentine Republic, or in Japan, will materially differ in "strength" from that dispensed elsewhere? Or, is it likely that a special chloral will be kept in stock, which may comply with some extra-refined requirement demanded by an international pharmacopœia?

On the other hand, it is quite proper, and even necessary, to enumerate and define such substances as the following, which are also contained in the draft:

Acida (mineral, liquid); Acidum benzoicum; Aconitina (German, English, and the cryst. French); Æther; Alcohol (90% and 70%); Ammonia (water); Antimonii sulphidum purificatum, — sulphidum rubrum; Antimonium sulphuratum; Argenti nitras fusus; Argenti nitras mitigatus fusus; Chloroformum; Digitalina (German, French, and cryst.); Hydrargyrum ammoniatum; Potassa; Potassii cyanidum; Veratrina.

But this list should be extended much further. It should include all potent chemicals recognized by the different pharmacopœias and known to be in use. For instance, if *potassa* is enumerated and defined, why should not *soda* be treated likewise?

Vegetable Drugs.—The following are contained in the draft:

Aconitum (Napellus; leaves and roots; we fail to see the utility of mentioning, specially, such varieties as "A. tauricum vel neomontanum Wulf."). Aloe (only Cape and Barbadoes are recognized in the description; Aloe socotrina is given as one of the sources). Belladonna (leaves and root). Cannabis Indica. Cinchona (1. Calisaya required to contain at least 2% quinine; 2. Pale bark: Loxa and Huano, 9 species (some of them of doubtful value or existence), required to contain at least 1% quinine; 3. Red bark, with at least 2.5% quinine, which we regard as too little. (Pale bark should have been omitted entirely.) Colchicum (corm. and seed). Colocythis. Conium (herb and "dried ripe" fruit, for which the "unripe" should have been named). Croton Tigilium (seed). Digitalis (leaves). Ergota. Filix mas (American species also recognized). Gratiola. Helleborus niger. Hyoscyamus (leaves and seeds). Ignatia. Ipecacuanha (the author of the name Uragoga Ipec. is H. Baillon, not "H. Brn"). Jalapa (there are

several errors in the nomenclature; Exogenium is wrong, should be Exogonium). Lactuca virosa. Laurocerasus, Lobelia. Nicotiana. Nux vomica. Papaver. Physostigma. Pulsatilla. Rhus Toxicodendron, Sabina. Scammonium (the author follows this heading by the misleading synonym "Scammonia;" next follows the name of the plant: *Convolvulus Scammonium* (should be *Scammonia*). Scilla. Stramonium (leaves and seeds). Veratrum album and viride.

Gums, Resins, and Gum-resins derived from Vegetable Drugs.—Cambogia. Euphorbium. Opium ("10 parts, dried with a gentle heat, should contain not more than 8-10 parts of water, and at least 10 parts of pure morphine." This passage reads thus in the original: "*Opii 100 partes, leni calore siccatae ne plus quam 8-10 partes Aquæ et ad minimum 10 partes Morphini puri contineant.*" Does this mean that fresh opium should lose by gentle drying not more than 8-10 parts of water, or that 100 parts opium, after being gently dried, may still contain 8-10 parts of water?). Resina Jalapa. Resina Podophylli.

Animal Drugs.—Cantharis. The pharmaceutical portion of the draft and other criticisms, are reserved for a future comment.

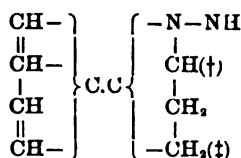
Antipyrin.

It is reported that the consumption of this new antipyretic has already assumed undreamed-of proportions, and that it is gradually and surely displacing quinine as a remedy for reducing high temperature. We have received a number of inquiries during the past six weeks, partly from pharmacists, and partly from physicians, asking for further information regarding the new drug. In order to satisfy these inquirers, the chemical and medical history of the drugs, so far as available at present, is given in a condensed form in the following, which is chiefly based upon our previous notes on the subject (AM. DRUGG., 1884, 239, et al. l.) and upon the *Jahresbericht über die Fortschritte der Pharmakotherapie* von Dr. ED. RUD. KOBERT, 1885, p. 312 sqq.

Regarding the classification of fever-remedies, this author correctly remarks that, at the present time, it is no longer correct to class all fever-remedies together. Such as have a specific curative effects in intermittents must be grouped separately, and may form the *quinine group*. The others, which have no effect upon malarial fevers, but merely lower temperature, form the second or *antipyrin group*.

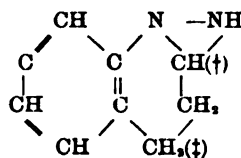
Chemistry of Antipyrin.

Dr. Ludwig Knorr, of the University of Erlangen, discovered a new series of bodies, having, as a common origin, a hypothetical base, called by the author *chinizin*, to which is assigned the constitution:*



One of the derivatives of this hypothetical radical is *methyl-oxy-chinizin*,

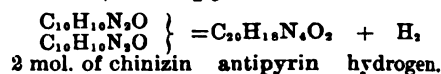
*Which may also be written thus (see AM. DR., 1884 239):



which differs from chinizin in this, that the hydrogen atom distinguished in the formula by the sign † is replaced by methyl (CH₃), and the two hydrogen atoms distinguished by the sign ‡, replaced by one molecule of oxygen.



If this methyl-oxy-chinizin is heated with an excess of phenyl-hydrazin to 170° C., or to boiling, two molecules of it unite with elimination of two atoms of hydrogen, and form *di-methyl-oxy-chinizin*, or *antipyrin*.



The name antipyrin was chosen because its proper chemical name is too uncouth for ordinary conversation.

The aqueous solution of antipyrin gives two characteristic reactions. Ferric chloride colors it deep-red (like most chinizin derivatives). Nitrous acid produces in its dilute solution a bluish-green tint; in a concentrated solution it causes the separation of green crystals. The latter reaction is still visible in dilutions of 1 in 10,000; the ferric chloride reaction in dilutions of 1 in 100,000.

According to Maragliano, the best reagent for antipyrin is iodized iodide of potassium (a solution of iodine in iodide of potassium), which yields a red color in solutions containing as little as 1 in 100,000. The drug may thus be recognized, even in the urine, if it be acidulated with sulphuric acid. The resulting tint is reddish-brown.

Physiological Effects.—Antipyrin exerts no influence on the spleen. In healthy man it lowers the temperature of the body only a few tenths of a degree, never below the lowest limit of the normal temperature. The excretion of nitrogen by the urine is diminished in healthy man as well as during fever. After large doses, a considerable increase of the compound sulphuric acids is noticeable in the urine, amounting sometimes to one-half of the total acid. It is, therefore, probable that antipyrin appears in the urine as antipyrin-sulphuric acid. Free antipyrin may be distilled over with steam. But no antipyrin can be detected in the distillate from urine after taking it. If, however, the copulated sulphuric acids in the urine be split up by boiling with hydrochloric acid, and the excess of acid then be neutralized with soda, antipyrin will readily pass over into the distillate. When larger quantities of the drug are given, it may be detected in the urine itself without distillation (*Fr. Müller*). After internal administration, it generally appears in the urine after three hours; the largest amount is passed during the fourth, but it is not completely eliminated after 24, or even 36 hours (*Maragliano; J. J. Hage*). It cannot be detected in the saliva or the perspiration (*J. J. Hage*).

Therapeutic Effect.—Antipyrin, administered to adults in 3 doses, given one hour apart, of 1.66 to 2 Gm. (25 to 30 grains) each, promptly subdues every kind of fever, generally without collateral effects (*W. Filehne*).

To children it may be administered in the same manner. The proper dose for them is about as many decigrammes (1½ grains) as the child's age amounts to (*Penzoldt; E. Sartorius*).

In phthisical cases, the remedy acts very promptly and uniformly, and is far ahead of any other antipyretic so far known. The relief afforded in these cases is quite remarkable; oppression and sensation of heat in the head, and gastric discomfort disappear entirely. No secondary effects, such as noise in the ears, dizziness, nausea, etc., make their appearance.

By continued use patients appear to become somewhat habituated to it. As much as 5 Gms. (75 grains) per day

* We quote the titles in the nomenclature familiar to American pharmacists.

are easily borne even by the very sick. When the temperature falls, sweating occurs, but on rising again, this symptom is absent. Even the first sweating may be prevented by administering *agaricin* at the same time as antipyrin (*Meissen; L. v. Hoffer, etc.*).

The quantity of *agaricin*, recommended by *Carl v. Norden* for this purpose is 5 milligrammes (ab. $\frac{1}{4}$ grain) once or twice hypodermically. Atropine may also be used.

According to *E. Rapin*, the remedy always causes more or less nausea. *A. Gier* observed it to produce vomiting only sometimes in children, never in the case of adults. Many other observers state that nausea is but rarely produced.

Another disease in which antipyrin is of the greatest service is typhus. In inflammatory rheumatism it has also been found to be of great service in keeping the temperature down. In one case, where 17 Gm. (270 grains) were administered in the course of 40 hours, the temperature remained almost constantly at the normal point; and the general condition of the patient was much improved during this period. But it has no curative effect upon the disease (*Alexander*). *Lenhartz*, however, obtained such favorable effects that he regards antipyrin even as a better specific in this disease than salicylic acid. Nearly all authorities agree that it is useless as a remedy in intermittents.

Antipyrin produces not unfrequently a peculiar exanthematous eruption, generally resembling measles (*Alexander; P. Ernst*); sometimes resembling scarlatina (*E. Bielschowsky*) or urticaria (*Alexander*). This eruption is sometimes accompanied by fever (*A. Cahn*).

Mode of Administration.

The best form is in solution, to be given *per os*. It may either be dissolved in plain or sweetened water, or combined with some flavoring ingredient. A good vehicle is syrup of raspberries (*Syrupus Rubi Idæi*), syrup of lemon, simple elixir, compound elixir of taraxacum, or wine. If the latter is used, each dose should be dissolved in it immediately before being administered, as the drug causes the precipitation of the coloring matter of the wine on standing.

Hypodermic injections have been tried, but have been found quite painful. Quite recently, however, Dr. Westbrook has reported two cases of sunstroke successfully treated by hypodermic injections of antipyrin, in doses of twenty to thirty grains, in form of a fifty per cent solution, by which but little irritation was produced.

It may, however, be administered *per rectum* with good success.

IN *Van Wyck vs. Harowitz*, New York Supreme Court, Special Term, 28 Daily Reg., 305, the question as to the right of a party to use another name upon his business cards, etc., by saying "late with," etc., was discussed and the court rendered an opinion that the motion to continue an injunction against such use of name must be granted because—

"First. The defendant is, without authority, using the plaintiff's name, which is the use of another's property for his own benefit, and to the injury of its owner.

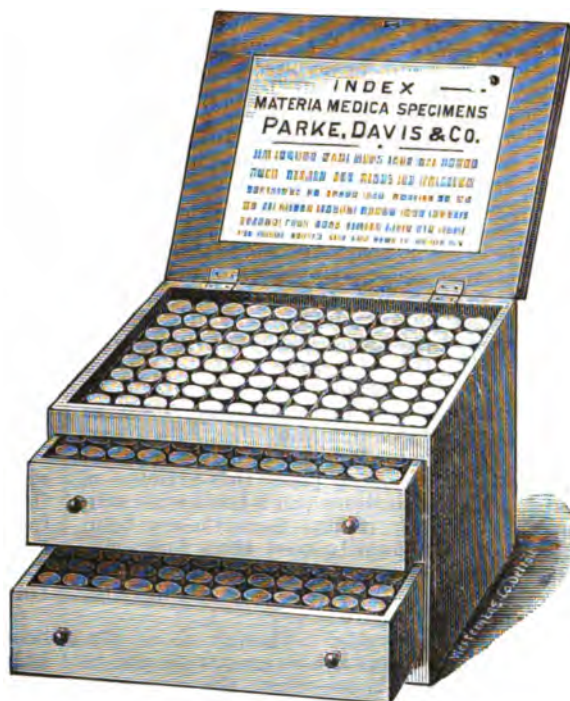
"Second. He is attempting to trans-

fer to himself a part of the reputation of the store and business of the plaintiff which also belongs to the plaintiff as really and as truly as his name or his personal property of which he is the actual owner.

"Third. The mode and manner of the use by the defendant of the name of the plaintiff are such as oftentimes to deceive, and because liable to deceive, and thus benefit the defendant at the expense of the plaintiff, such use must be held to be unlawful.

THE Committee on Adulterations and Deteriorations of the Pennsylvania Pharm. Assoc., at its last meeting, remarked in the course of its report:

"The bonanzas of adulteration and deterioration were found, not in the shops of our regular apothecaries, but in the stocks of physicians who supply their own medicines. We found rancid and decomposed ointments; fluid extracts which were hardly respectable tinctures; fermented syrups; sweet spirit of nitre, acid, deficient in alcohol and containing scarcely a trace of nitric ether; Tr. Opii Camph., prepared "strictly according to the U. S. P." by the physician himself, in which the undissolved benzoic acid scintillated



beautifully, and the oil of aniseed was displayed in tiny globules; alcohol testing sixty-five per cent spirit, and a choice display of sample proprietary articles from so-called manufacturing chemists, on which were displayed not only directions and doses, but also the diseases for which they were recommended kindly mentioned. It is but just to say that these doctors had a poor opinion of the action of medicines, and doubted the truthfulness of their properties as given in the books."

AMONG the valuable recent Government publications is a catalogue made by Dr. H. Carrington Bolton, of New York, and issued by the Smithsonian Institution, embracing a list of all the scientific and technical periodicals that have appeared since the origin of this class of literature in 1728. It does not include medical periodicals (probably because these are already the subject of the very thorough catalogue of the library of the Surgeon General's Office), nor the transactions and proceedings of societies mentioned in the list of scientific serials published in 1879.

THE sixth volume of the Index Catalogue of the Library of the Surgeon

General's Office, appeared on the 20th of June, 1885, bringing the alphabetical arrangement to INSFELDT. The number of *author-titles* in the series already published are: Titles, 58,886; volumes, 33,265; pamphlets, 47,325. *Subject-titles*: Book-titles, 64,132; Journal articles, 219,154. *Portraits*, 4,335.

THE Chemical Society of Tokio has adopted the plan of printing its proceedings in Japanese with the use of Roman letters instead of Chinese characters.

WE are in receipt of a circular from Cocking & Co., of Yokohama, Japan, calling attention to their manufacture of Japanese oil of peppermint and menthol crystals for which the house is noted. The house also deals in cod-liver oil, oil of sweet-orange, essential oil of camphor, Japanese isinglass ("agar-agar"), vegetable wax, and maltosine ("midsu-ame"—a malt extract made from rice of the consistency and appearance of strained honey.)

THE programme for the meeting of the Michigan State Pharmaceutical Association, held on the 13th, 14th, and 15th of October, and the card of admission to the collation sent us by

Mr. A. W. Allen, the local secretary, are very handsome specimens of typography and arrangement, and quite characteristic of the enterprise and good taste which our Michigan friends have shown in so many ways.

WE have received from the Coffin and Wood Chemical Co., of Detroit, Mich., a very handsome sample of menthol which this company is about placing in the market. Its odor is very agreeable and the manufacturers claim for it an unusually high melting point. Those who desire a supply of this substance will do well to communicate with this firm.

THE National Wholesale Drug Association is in session in Philadelphia, as we go to press, having elected the following officers: *President*, Mahlon N. Kline, of Philadelphia; *Vice-Presidents*, A. H. Jones, Philadelphia; James C. Richardson, St. Louis; J. L. Bird, Boston; Charles H. Pettet, Louisville; F. A. Paxon, Kansas City; *Treasurer*, S. M. Strong, Cleveland; *Secretary*, A. B. Merriam, Minneapolis; *Board of Control*, James C. Richardson, St. Louis; Daniel R. Noyes, St. Paul; Charles Osgood, Norwich, Conn.; J. W. Rankin, Atlanta, Ga.; J. S. Ferrard, Detroit. A number of additions have been made to the membership, and the Association has adopted a resolution increasing the annual dues from \$10 to \$15; the extra \$5.00 to be devoted to the formation of a benevolent fund.

Materia Medica Collection.

STUDENTS of pharmacy and medicine are interested in an offer by Parke, Davis & Co., of Detroit, to furnish for ten dollars, a collection of 288 specimens of crude drugs of vegetable origin, in common use, including all that are at present official and many besides, providing they receive at least fifty orders in advance. Each specimen will be packed in a little box with a numbered label, and an index or key will accompany the case which holds the collection. This arrangement will facilitate practice in the identification of drugs. The case will be 23x16x13 $\frac{1}{2}$ inches in its dimensions, and its general appearance is shown in the accompanying illustration.

Semi-annual Report on Commercial Drugs and Chemicals.

(From Gehe & Co.'s September Report, 1885.)

Agaricine—a principle of feebly acid properties, prepared from agaric (which has been used with success for suppressing excessive sweating), has been in increased demand.

Antipyrin—may justly be regarded as the first artificial base of importance. It is, under certain circumstances, a true rival of quinine. Its consumption is estimated to amount already to one-fifth of that of quinine, and is likely to make still further progress.

Atropine.—Gehe & Co. attribute their action in demanding higher prices for their atropine to the fact that belladonna root was about thirty per cent higher in price.

Balsam of Peru, white—said to be obtained from the fruits of the balsam tree, has been received by Gehe & Co. in small quantity, only sufficient for furnishing specimens.

Bismuth—has remained unchanged. Up to the present time no definite information has been received regarding the extent of the Australian production, which threatened to become a formidable rival to the Saxon and Bolivian product. Bismuth ore has lately been offered from Norway, and metallic bismuth derived from a new Bolivian source has also been lately offered in Hamburg.

Bismuth Subnitrate.—The German Pharm. requires that not more than traces of chlorine should be present, shown by the test-liquid producing not more than an opalescence without rendering the solution opaque. It is unreasonable to demand more, for at a certain stage of the process it is necessary to get rid of any silver that may be present by the cautious addition of hydrochloric acid; and no matter how carefully this may be done, a little chloride of bismuth will eventually remain in solution in the nitrate and be precipitated with the latter.

Bromine.—Dr. A. Frank's "solidified bromine," that is, bromine soaked up by kieselguhr, and pressed into sticks, is constantly becoming more popular, both for disinfection and for scientific purposes. Whenever bromine is to be weighed—as in the preparation of bromated soda solution (for nitrogen estimations)—the solidified bromine is of great advantage.

Cassia and Oil Cassia.—According to Chinese reports, great damage has been caused in the cinnamon producing districts by inundations. An upward tendency is, therefore, noticeable in the Chinese market, which may also affect the oil.

Cerium and Salts—have been in diminished demand, perhaps because cocaine has been found to be a most superior and prompt remedy against vomiting in pregnancy.

Coca Leaves—have played an important rôle. Last April the stock on hand in Europe and the U. S. was completely exhausted, and the price had advanced to five times what it had been before. Since May, however, the expected reaction has taken place, and the price has receded faster than it had formerly advanced. Probably more than 1,000 bales of coca leaves have since then been shipped to Europe, though the quality was rather inferior. Peruvian coca leaves are thin and narrow, the Bolivian thicker, broader, and darker, and show, on their lower surface, the characteristic elliptic ridge along both sides of the midrib, which is not always the case with Peruvian coca.

Cocaine.—Gehe & Co. report that the belief of the existence of a cocaine-like substance in the young leaves of the horse-chestnut has turned out to be unfounded. When these leaves were worked by the same process as

coca leaves, no cocaine, but traces of a volatile liquid base of agreeable odor were obtained. This base acquires a fine red color when treated with sulphuric acid, and appears to be identical with the substance which accompanies, and must be separated from, cocaine. See also under pilocarpine.

Codeine.—The excessive price to which this alkaloid has been driven has already seriously affected its consumption, even in France, where it has been a favorite remedy. It is chiefly owing to the high price of codeine that morphine rules so low. As soon as codeine recedes in value that of morphine will certainly advance. Even without considering the relation of codeine to morphine, the market value of the latter is out of proportion to that of opium, and will probably suffer an advance.

Cubebs—have maintained their high price. From the beginning of this year up to April, the price per cwt. rose from £10 to £15; subsequently it oscillated between the latter figure and £12, and at the present time (Sept. 1st) is again at £14 10 sh. The imports in England and Holland were comparatively small, and often consisted of the light-gray large berries which are regarded as spurious, and are said to be derived from *Piper Crassipes* and *Daphnidium Cubeba*. It has been recommended to test them by grinding them in a mortar with addition of a few drops of concentrated sulphuric acid, whereby genuine cubebs acquire a carmine-like color, the berries of *Piper Crassipes* a reddish-brown, and those of *Daphnidium* a yellowish-brown tint. Mixtures of genuine and spurious cubebs turn bright brownish-red. A decoction of genuine cubebs is said to give, with a trace of tincture of iodine, an indigo-blue color, a reddish one with *Piper C.*, and no color with *Daphnidium*, while a mixture of genuine and spurious turns pale violet-blue. [The above-named reactions need confirmation.—Ed. A. D.]

Helinin—lately recommended in Paris as an antiseptic, has been in considerable demand.

Ichthyol.—Though it is probably an exaggeration to place this article—as it has been done—on a level with salicylic acid, it has nevertheless been more frequently used than formerly, particularly as *sulpho-ichthyolate of sodium*. The ammonium salt has also been used.

Insect Powder.—Though about 270,000 lbs. of last year's crop were still in stock at Trieste when the new crop arrived in May, the price of wild closed flowers, which was expected to recede, nevertheless rose from 135 to 165 florins, and even expanded flowers ruled high.

Kefyr (Kephir) and Kapyr.—The Caucasian milk ferments, used for the preparation of a peculiar kind of kumys, have already been used to a considerable extent. To make up for the fragmentary, and sometimes incorrect, information on this subject, contained in various publications, Gehe & Co. furnish the following data, based on reports from Russia, regarding the preparation of kefyr and of kefyr-kumys. The dried fungi, or kefyr granules (see AM. DRUGG., 1884, p. 194) are soaked for three hours in lukewarm water, then washed repeatedly with pure water, placed into fresh milk at a temperature of 30° C. (86° F.), and the latter renewed every day. If occasionally (but gently) agitated, it requires about eight days for the fungi to become enlarged, of a whitish color, and specifically lighter so as to rise to the surface. In this condition they are fit for use. To prepare the "kefyr" proper, as it is called among the mountain inhabitants, the fungi prepared as above are covered with six to eight times their volume of fresh, cool skim-milk, the vessel is closed with a cork, and set aside for

twenty-four hours at a medium temperature, occasionally agitating. The liquid is then strained off, the fungi washed with cold water, and one or two further quantities of milk treated in the same manner. The resulting liquid is a beverage resembling fresh buttermilk in appearance and taste. Kefyr-kumys, or, as it is there called, kapyr, is prepared from the preceding by mixing one part of the kefyr with two parts of fresh, cool milk, pouring the mixture into champagne bottles, corking well, and setting aside, occasionally shaking, for 24, 48, or 72 hours, according as a "weak," or "middling strong," or "strong" kapyr is wanted.

Keratin—the liquefied substance of horns, has been proposed as a coating for pills that are to be protected against digestion in the stomach. So far, the article has only been used experimentally. Some regard it as unclean and offensive.

Menthol—has lately been reported to be serviceable as a substitute for cocaine [in 25 or 30% solution in alcohol or ether. Its employment will, no doubt, be rather circumscribed, even under the most favorable circumstances.—Ed. A. DR.]

Morphine.—See codeine.

Mustard—is in good demand for the United States, as the Californian crop has been a failure.

Naphthalin.—Gehe & Co. regard the purification of naphthalin (for internal use) by recrystallizing it from alcohol as the only way to obtain a sufficiently pure preparation. In this condition it has a much milder odor than when sublimed. When recrystallized from alcohol, even the whitest sublimed naphthalin leaves behind, in the mother-liquid, a yellow substance not yet investigated, and of very intense odor. To improve the odor of naphthalin, Prof. Rossbach recommends oil of bergamot.

[We are not aware at what time Prof. Rossbach first recommended this, and it is very likely he hit upon it accidentally, just as one of us did. But we have communicated this fact long before Prof. Rossbach has done so, both verbally to many members of the medical profession, to the manufacturers of naphthalin in this country, and also to the readers of our journal, f. i., Jan., 1885, p. 17.—Ed. A. DR.]

Opium.—The last crop, which had been estimated at between 9,000 or 10,000 couffes, turned out to be not over 7,500. In consequence, prices advanced about 5%.

Pancreatin—is in very feeble demand. It is now said to be altogether without value, as it is "destroyed" by the acid contents of the stomach.

Physostigmine.—See pilocarpine.

Pilocarpine.—It should be noted that the neutral salts of pilocarpine, physostigmine and cocaine, have a faint acid reaction.

Pyridine—has been recommended as a remedy in asthma by Prof. Séé, of Paris. At first it was in brisk demand, but this has diminished. The pure base is used by inhalation, being poured on small plates. The nitrate is suitable for internal use.

Quinine.—The fight for the American market, which has raged during the last six months between the continental and the American manufacturers, has depressed quinine to an extraordinarily low figure, which does not bear a true proportion to its real value, and therefore did not pay the maker. This is no doubt the cause of a slight advance during the last few weeks, which may possibly make further progress. But it is not to be expected that the former high prices will ever be reached again. The continued discovery of substitutes for quinine, the increasing competition among manufacturers, and particularly the totally altered condition of the

bark market, make any return of the former *hausse* quite improbable.

In the U. S. of Colombia, near Bogota and Buccaramanga, attempts have been made to extract cinchona bark. Since alcohol may there be cheaply prepared from cane juice, an undertaking of this kind is quite practicable, theoretically. The experiments, however, are said to have been failures, since the parties who undertook them did not possess the necessary practical knowledge and skill, in consequence of which the resulting product was contaminated with too large a proportion of amorphous alkaloid and resin, and contained too little quinine.

Rhamnus Purshiana Bark—or Cascara sagrada, appears to have become a permanent drug. The brisk demand for it, at least, indicates that it has become a favorite remedy.

Saffron—both Spanish and French, has advanced about 10% in price since last July, owing—as it is said—to a diminished cultivation in consequence of the Cholera.

Tartaric Acid.—In consequence of a coalition of the German manufacturers of tartaric acid, the price of this article has remained almost unaltered (in Germany).

Up to the present moment, this industry has been able to stand the competition of foreign countries, although it has been largely dependent upon foreign supplies of crude material (chiefly from Italy). The Italian manufacturers have lately petitioned government to increase the duties of export for crude tartar and argols. Should this be conceded, the result will be very serious for the German manufacturers. [Of course, it will also considerably affect this country. —ED. A. DR.]

The Specific Gravity and Percentage Strength of Aqueous Sulphurous Acid.

FROM a paper on this subject, by Wm. B. Giles and A. Shearer in the *Pharm. Journal* (Sept. 5th), we abstract the following passages:

"We found that it was necessary that, in estimating sulphurous acid when combined with bases, the sulphite should be added to the iodine solution, and not the iodine to the sulphite, and that instead of diluting with water down to the percentage of .05 per cent of SO₂, as recommended by Bunsen, it was unadvisable to use any water at all, but simply to place the weighed solid or liquid body straight into an excess of decinormal iodine solution. The results we obtained in this manner were so satisfactory, and so concordant with those obtained by the much more tedious gravimetric process, that we resolved to make a further research as to whether the same method could be applied to the estimation of the acid itself in the free state. A considerable number of preliminary trials having shown us that the determination was as correct in the latter as in the former case, we finally resolved, as a crucial test, to use the pure condensed sulphur dioxide as a means of comparison. The gas (SO₂) employed was deprived of moisture by passing it through a tube ten feet long, filled with small flints continually kept wetted with concentrated sulphuric acid, and after being liquefied it was redistilled under pressure in glass vessels, and sealed up in small glass bulbs previously tared without any exposure to the air. In this form the sulphur dioxide appears to be almost chemically pure, the only impurity that could be found being a mere trace of hydrocarbon oil derived from the lubrication of the pump with which its condensation was effected. The glass bulbs, holding from three to four grains, being weighed, were broken under a slight excess of pure

decinormal iodine solution, contained in a stoppered bottle to avoid any possible loss of gas, the amount of excess being then determined as usual with thiosulphate. The mean percentage of SO₂ obtained was 99.68 per cent, and as this entirely confirmed our previous results, we resolved to construct a table showing the amount of this acid in its solutions of various specific gravity, especially as from various cogent reasons we were led to doubt the accuracy of the only tables we have been able to find as having been made by previous observers."

[The authors give three tables, comprising the results of their own experiments, which we have condensed into one, with omission of a few determinations made at other temperatures than the remainder. They also append tables of percentage and spec. grav. given by previous authorities, of which that by H. Schiff is evidently the most incorrect.]

Aqueous Sulphurous Acid.

Specific Gravity at 15.5° C.		Percentage of SO ₂ .	
Observed.	Calculated.	Observed.	Calculated.
1.0051	1.00495	0.99	1.02
1.0102	1.01035	2.05	2.04
1.0148	1.01435	2.87	2.96
1.0204	1.02020	4.04	4.08
1.0252	1.02495	4.99	5.04
1.0297	1.02945	5.89	5.94
1.0353	1.03505	7.01	7.06
1.0399	1.04040	8.08	7.98
1.0438	1.04340	8.68	8.76
1.0492	1.04900	9.80	9.84
1.0541	1.05375	10.75	10.82

"The results of a very large number of trials, conducted with every precaution that offered itself to our consideration, lead us to propound the following very simple law of the ratio between any given percentage of sulphur dioxide in an aqueous solution at 15.4° C., 760 m.m. and its specific gravity—viz., that under the foregoing conditions, the percentage of SO₂ multiplied by 5, gives the specific gravity of the solution over and above 1.000. Thus, for instance, a solution containing 1 per cent of SO₂, has a gravity of 1.005; one of 5 per cent, a gravity of 1.025; one of 10 per cent, a density of 1.050, and so on; so that, on the other hand, if we know the specific gravity, we can, of course, at once tell the percentage SO₂, provided that this is the only body present to influence the density. Whether this law be absolutely correct or not, is, of course, uncertain, but it is undeniable that the experimental results exhibit an extraordinary agreement with the theoretical figures, and that for all practical purposes it may be assumed to be so."

Crystallized Antipyrin.

At the recent meeting of German naturalists and physicians, held at Strassburg, Prof. Flückiger exhibited some handsome crystals of antipyrin, which he had obtained from its aqueous solution. These were carefully measured by Liweh, who found them to belong to the monosymmetric system. Prof. Flückiger remarked, that crystallized antipyrin would long ago have appeared on the market if its manufacture were not protected by a patent. At present it is only sold as an indistinctly crystalline powder, which, up to a short time ago, was not always pure and of uniform therapeutic effect.—*Chemiker Zeit.*

Volatility of Mercuric Chloride.—According to Mr. D. B. Dott, the loss in weight at ordinary temperature is extremely low. In twenty-one days it amounted to only .053 per cent = 0.0001 per cent in the hour. At the temperature of the water-bath the loss is equivalent to 0.50 per cent per hour.

WAFER CAPSULE APPARATUS.

THE publication of the description of wafer capsuling apparatus, after Hager, in our last July number (pp. 125, 126), has brought us several communications drawing our attention to somewhat modified forms designed by others.

Mr. Giovanni Torta, of Turin, is the originator of the apparatus here described. B is a little wooden plate, upon which the concave wafer is placed. Upon this is placed the cylinder C, the powder poured into this and compressed by means of the piston D, which has a concave depression at the bottom. The piston and cylinder are then removed; another wafer, slightly moistened at the edges, is placed on top, and the two pressed together with the stamp A. The price of this apparatus is 20 to 25 francs.

Another recently patented and improved apparatus will be described in a subsequent issue.



C
Torta's wafer capsule apparatus.

D

Effect of Sunlight upon Hypochlorous Ether.

TRAUGOTT SANDMEYER has prepared and studied a new ether, namely, ethyl hypochlorite: ClOCH₂H₅, on which he makes a detailed report in the *Berichte d. D. Ch. G.*, 1885, 1767. This ether has some remarkable properties. It is prepared in the following manner:

Chlorine gas is conducted into a ten-per-cent aqueous solution of soda, well cooled by ice, until it is no longer absorbed. This causes the production of free hypochlorous acid:

$$\text{NaOH} + 2 \text{Cl} = \text{NaCl} + \text{ClOH}$$

soda chlo- sodium hypochlor-
 rine chloride ous acid

The resulting yellow solution is immediately transferred to a separating funnel and mixed with an equal quantity of alcohol, when it becomes almost instantly turbid, and after a few minutes separates, an oily layer floating on the aqueous solution. This oily layer is transferred to another separating funnel, washed with water, and transferred to a small flask containing chloride of calcium.

The ether is a yellow, mobile, exceedingly volatile liquid, of a "hypochlorous" odor, and highly irritating to the respiratory organs. It burns with a luminous green-bordered flame. It may be distilled unaltered, but its vapor when overheated is explosive. It is soluble in ether, benzol, and chloroform, but after a while enters into chemical combination with them. It has the remarkable property that, when exposed to sunlight, it begins, after a few minutes, to boil and to bump, which ends with an explosion. This is not caused by the heat, but by the light-rays, as may be shown by immersing the vessel containing the ether into ice-water during the exposure, when its contents will boil and explode as before.

FILTER PUMPS.

A SMALL, but very serviceable and simple filter pump may be constructed, according to Dr. A. Sternberg, in the following manner: Blow a small lateral tube *d* upon a glass tube *a*, the latter having a length of about 8 inches and a bore of $\frac{1}{4}$ inch. Another piece of glass tubing *b*, of the same size, is drawn out at one end to a smaller calibre, so that this contracted portion may fit loosely within the tube *a*. The two tubes are joined together by means of rubber tubing, as shown in the cut. The end of the tube *b* should extend at least one-fifth inch beyond the point where the lateral tube *d* is blown on *a*. The orifice of *b* should be as large as the calibre of the outer tube permits.

When the apparatus is used, the tube *b* is connected with the water-supply which must be under some pressure. The water passing from the orifice *b* aspirates air through the tube *d* in the usual manner.

This filter-pump consumes but little water and produces almost a complete vacuum, provided the relative dimensions of the different parts are correctly adjusted.

The tubes *a* and *d* may be replaced by brass tubing, in which case the apparatus is less liable to break.

Filter pumps have become so important for saving time in chemical laboratories and manufacturing establishments, that it would be found of the greatest advantage for every working pharmacist to employ them likewise, as they will be useful for a variety of purposes. One of the best and handiest forms is that which we described in *NEW REMEDIES*, 1879, p. 206, made by Körting, of Hanover. Another form of the same is illustrated in the annexed cut. The price of these pumps is comparatively trifling, being only about eight dollars for the form here shown. When employing them, two things should be borne in mind; *first*, that the outlet pipe for the water should dip below the surface of water contained in a tank or other vessel, so that no air may get into the apparatus by this channel; and *second*, that when the supply of water is to be shut off, air should either *previously* be admitted into the exhausted space or, at least, at the same time as the water is shut off. Unless this is done, water will regurgitate and be projected through the air-pipe into the vessel in which the air had been exhausted. When this happens in a case where the *filtrate* contained in the vessel (*B*, in the cut) is to be preserved for further operation or analysis, the whole labor may have been for naught, since the influx of common water may have introduced numerous sources of error. To avoid this drawback, a check-valve may be interposed between the filter pump and the vessel to be exhausted. But even this is no sure protection, in our experience, since even the best check-valve will get "stuck" after some time, and may leave the operator in the lurch just at a critical moment. An *absolute* protection, however, is secured by using two separate bottles or vessels, connected with each other, the last or outer one of which is used for the filtration. Should any water, by some accident, regurgitate, it will be projected into the intermediate vessel, where it can do no damage.

Hay-fever, according to *Science pour Tous*, can be traced back to the literature of the 16th century.



Sternberg's Filter-Pump.

Useful Formulæ.*

Cachou Aromatisé.

Mace.....	14 Gm.
Cardamom.....	10 "
Vanilla.....	19 "
Cloves.....	5 "
Orris Root.....	20 "
Musk.....	1 "
Oil Neroli.....	20 Gtt.
" Cinnamon.....	30 "
" Lemon.....	40 "
" Peppermint.....	60 "
Chocolate.....	100 Gm.
Extract of Licorice.....	q. s.

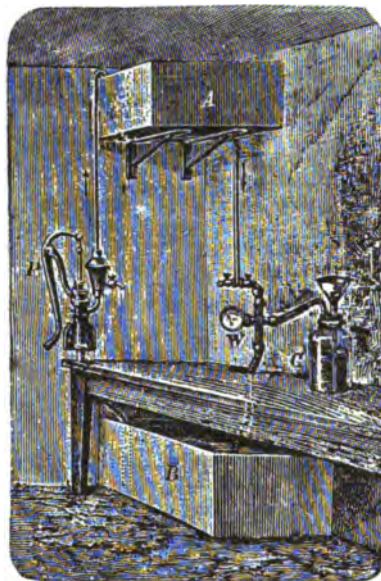
Reduce the first six ingredients to fine powder. With the aid of the extract of licorice make a mass weighing 200 Gm., and divide it into 200 pills. Coat them with silver.

Dentrifrice.

a. Pastes.

1. Castile Soap.....	425 parts.
Calcium Carbon., precip.....	425 "
Orris Root, powd.....	150 "
Carmine.....	5 "
Oil Peppermint.....	10 "

With the aid of glycerin make a paste. This is known as *odontine*.



Körting's filter pump in position.

2. Salicylic Acid.....	10 Gm.
Calcium Carb., precip.....	100 "
Venetian Talc.....	25 "
Castile Soap, pd.....	25 "
Pumice Stone, pd.....	25 "
Sugar.....	15 "
Carmine.....	2 "
Oil Peppermint.....	50 drops.

With the aid of glycerin make a paste.

b. Powders.

1. Magnesium Carbon.....	25 parts.
Orris Root, pd.....	50 "
Castile Soap, pd.....	75 "
Calcium Carb., precip.....	150 "
Oil Peppermint.....	2 "
2. Crabstones, pd.....	100 parts.
Cuttle-Fish Bone, pd.....	100 "
Cinnamon, pd.....	25 "
Orris Root, pd.....	25 "
Charcoal.....	25 "
Vanilla, pd.....	1 "
3. Oyster Shell, pd.....	400 parts.
Orris Root, pd.....	50 "
Magnesium Carb.....	50 "
Oil Peppermint.....	2 "

Eau Anathérine.

Cinnamon.....	10 Gm.
Cinchona Bark, red.....	10 "
Guaiac Wood.....	10 "
Cloves.....	10 "
Red Saunders.....	20 "
Alcohol.....	2,500 "
Rose-Water.....	500 "

Digest the solid ingredients, reduced to a moderately coarse powder with

* From *Kiczka's Pharmaceutisch. Manuale* (8vo, Wien, 1885).

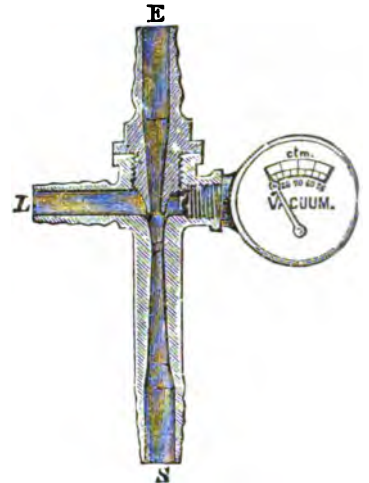
the alcohol and rose-water a few days, filter and add

Oil Sage.....	30 drops.
" Cinnamon.....	30 "
" Cloves.....	30 "
" Mustard, eas.....	3 "
Spirit of Nitrous Ether.....	5 Gm.

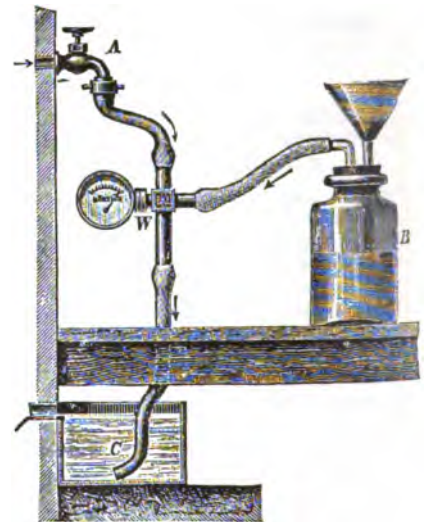
Eau de Botot.

Anise.....	100 Gm.
Cloves.....	25 "
Cinnamon.....	25 "
Oil Peppermint.....	5 "
Cochineal.....	5 "
Vanilla.....	1 "
Alcohol.....	800 "
Rose-Water.....	200 "

Digest 8 days, and filter.



Section of Körting's filter pump.



Arrangement of Körting's filter pump.

Eau de Naples.

Borax.....	10 Gm.
Rose-Water.....	150 "
Spirit Camphor.....	5 "
Tinct. Benzoin.....	2.5 "

Dissolve the borax in the rose-water, and add the other ingredients. Filter.

Eau sans pareille.

Oil Neroli.....	2 parts.
" Lemon.....	3 "
Extract of Ambergris.....	3 "
" " Musk.....	4 "
Oil Bergamot.....	5 "
" Orange (Port.).....	5 "
Alcohol.....	600 "

(Formulæ for ext. of ambergris and musk will be found in our September number, page 167.)

Extract of New-Mown Hay.

Cumarin.....	2 Gm.
Oil Neroli.....	15 drops.
" Rose.....	15 "
Alcohol.....	1,000 Gm.

(Other formulæ for this and some of the following odors will be found in the September number, page 167-168.)

Extract of Heliotrope.

Heliotropin	10 Gm.
Oil Neroli	1 "
Tinct. Musk	10 drops.
Alcohol	2,000 "

Extract of Musk.

Ambergris	1 part.
Oil Rose	8 parts.
Musk	10 "
Alcohol	1,000 "

Extract of Patchouli.

Oil Rose	2 parts.
" Patchouli	10 "
Alcohol	1,000 "

Extract of Reseda.

Reseda (Mignonette)	
Flowers, fresh	100 parts.
Water	300 "
Alcohol	200 "
Macerate one day, then distill off	
	250 "

Extract of Violets.

Oil of Orris Root	5 parts.
Alcohol	2,000 "

Extract of Ylang.

Oil Neroli	5 drops.
" Rose	10 "
Musk	0.1 Gm.
Oil Ylang	2 drops.
Alcohol	1,000 "

Millefleurs.

Oil Orris Root	2 Gm.
Balsam Tolu	1 "
Oil Ylang	1 "
Musk	0.1 "
Alcohol	1,000 "

Fly Paper.

1. Arsenite Potassium..... 20 parts.
- Carbonate Potassium..... 15 "
- Water
- 400 "
- Sugar..... 65 "

Dissolve, saturate red blotting paper with it, and dry.

2. Quassia
- 150 parts.
- Water..... 350 "

Make a decoction, saturate red blotting paper with it, and dry.

(It is advisable to use paper upon which is distinctly printed the word "poison.")

Toilet Vinegar.

Musk	0.1 Gm.
Oil Lavender	0.5 "
" Rosemary	0.5 "
" Orange, Big	1 "
" Neroli	1 "
" Bergamot	5 "
" Lemon	5 "
" Cedrat	5 "
" Orange, Port	5 "
Tinct. Tolu	20 "
" Benzoin	20 "
" Krameria	2.5 "
Alcohol, 80%	1,000 "
Vinegar, 6%	300 "

Macerate one month, then filter.

Toothache Drops.

1. Camphor
- 25 parts.
- Chloroform
- 200 "
2. Oil Peppermint
- 1 part.
- Camphor
- 10 parts.
- Oil Cajuput
- 15 "
- Chloroform
- 50 "
3. Oil Mustard, ess
- 2 parts.
- Alcohol
- 30 "

Pastilles of Tamarind.

Tamarind Pulp	800 parts.
Glycerin	50 "
Senna, powd	150 "
Resin Podophyllum	1 part.

Mix the tamarind pulp and glycerin, and heat on a water-bath until the mixture has the consistence of a thick extract. Then add the other ingredients, previously well mixed, and make a mass to be divided into one hundred pastilles. [Great care should be taken that the resin of podophyllum is uniformly mixed with the senna.]

Cocaine as a Remedy in Sea-Sickness.

In our issue of December, 1884, while giving an account of cocaine and its salts, and the new therapeutic effects discovered in it, we wrote as follows (AM. DRUGG., 1884, 231):

"If ever a remedy, on purely theoretical grounds, held out any hopes of being serviceable in sea-sickness, it seems to us that cocaine is one of these. At all events, it will be worth while to try its effects."

We learn now that Dr. Manassein, of St. Peterburgh, undertook a voyage on purpose to try its efficacy in this distressing complaint. He states (*Berl. Klin. Wochen.*, Aug. 3d; *Pharm. Journ.*), that two individuals to whom he administered the hydrochlorate of the alkaloid on starting, were, for the first time in their lives, free from sea-sickness during a period of forty-eight hours of rough weather, and enjoyed a good appetite the whole time. A child, six years old, attacked early in the morning with sea-sickness, was able to play about during the storm after taking the cocaine. In another case, in which a girl of eighteen years of age had been sick for twenty-four hours before taking the cocaine, six doses proved effectual. Dr. Manassein thinks, therefore, that he is quite justified in inferring that in cocaine we have a certain and harmless remedy against sea-sickness.

It remains to be seen whether it will prove efficacious under all circumstances, and whether its effects are lasting enough to tide the passenger over the critical period, which is the first two or three days of a sea voyage. It seems advisable, in view of the local anæsthetic action of the drug, to administer it on an empty stomach, so that its action may be rapid and not interfered with. Further reports on its effects in sea-sickness will soon be available.

Improved Bengal Lights.

It is well known that the compositions of the colored Bengal lights are dangerous, on account of their spontaneous inflammability; and it is well, therefore, to publish the results of Thoenner's investigation on this subject. According to Thoenner, only perfectly pure chemicals should be employed, especially when potassium chlorate is one of the constituents. Friction, shock, and heating increase the danger. The point of inflammation generally changes in time, and becomes lower, so that the danger increases, with age. The addition of lycopodium does not in any way diminish the danger, as has been stated by some.

White.—I. Potassium nitrate, 24; washed flowers of sulphur, 7; arsenious sulphide, 2. II. Potassium nitrate, 4; flowers of sulphur, 2; antimonious sulphide, 1. III. Potassium nitrate, 16; sublimed sulphur, 8; flour, 3. IV. Potassium nitrate, 36; sublimed sulphur, 7; antimony, 12. V. Potassium nitrate, 8; antimonious sulphide, 1.5; washed flowers of sulphur, 2.5. VI. Potassium nitrate, 12; washed flowers of sulphur, 3; antimony, 2. **White** (theatre fire, poured out loose).—I. Potassium nitrate, 72; sublimed sulphur, 12; antimonious sulphide, 12; arsenic disulphide, 8; shellac, 1. II. Potassium nitrate, 32; sublimed sulphur, 8; antimonious sulphide, 12; red lead, 11. **Yellow.**—I. Sodium nitrate, 24; arsenious sulphide, 2; sulphur, 7; antimony (crude), 2. II. Potassium nitrate, 16; sulphur, 4; flour, 16; amber, 4; pine resin, 3; pitch, 4. III. Sodium nitrate, 6; sulphur, 1; soot, 1. **Blue.**—I. Potassium nitrate, 16; antimony (crude), 8; zinc, 7. II. Ammoniacal copper sulphate, 2; potassium chlorate, 4; sulphur, 1. III. Potassium chlorate, 3; mountain blue, 1; sulphur, 1. **Vio-**

et.—Potassium chlorate, 49; sulphur, 25; precipitated calcium carbonate, 20; black oxide of copper, 6. **Red.**—I. Potassium chlorate, 5; strontium nitrate, 16; arsenious sulphide, 1; sulphur, 2; soot, 1. II. Potassium nitrate, 5; sulphur, 2; antimony (regul.), 1. III. Strontium nitrate, 20; potassium chlorate, 2; sulphur, 5; antimony (crude), 0.5; charcoal, 2. IV. Strontium nitrate, 48; flowers of sulphur, (washed), 9; pulverized charcoal, 2; potassium chlorate, 8. V. Strontium nitrate, 5; washed flowers of sulphur, 15; charcoal, 0.5; potassium chlorate, 6.5.

A New Source of Chloroform.

AN Albany chemist, Gustavus Michaelis, claims to have discovered a method of producing chloroform at greatly reduced cost and, at the same time, of better quality. Alcohol as a base is not used, and thus the cost of chloroform is lessened one-fourth. Wood is decomposed at high temperatures, and from the residual crude acetates which arise from the proper chemical treatment of the products of the decomposed wood, other products are secured from which the chloroform is obtained. A residual matter is also obtained which yields acetic acid, or purified acetates. Part of the Aniline Works have been secured, and a plant is in position which will enable the company to put out 500,000 pounds of chloroform per year, with unlimited possibilities of growth.—*Oil, Paint, and Drug Rep.*

Influence of House-Plants.

THE question whether growing plants are injurious to health when placed in a bed-room has often been discussed. According to Dr. J. M. Anders (*Gardiner's Chronicle*, June 21st) the numerous experiments during three or four years show that ozone is rarely found in dwelling-rooms except when a number of flowering plants are introduced. Even inodorous plants were found to exhale ozone in a lesser degree. Sunshine or strongly-diffused sunlight is, however, as essential to the production of ozone as it is to the work of assimilation and transpiration.—*Pharm Jour.*

[It is doubtless owing to the difficulty with which many flowering plants are made to flourish in city houses that so few of them are cultivated. The reason for this, in most cases, is to be found in the escape of illuminating gas from imperfect fixtures. A very small proportion of illuminating gas present in the air of a room will poison the hardiest plant and cause it to lose its foliage.—*Ed. AM. DRUGG.*]

Detection of Cinchonidine in Sulphate of Quinine.

DE VRIJ recommends, in the *Pharm. Weekblad*, the following method for the determination of cinchonidine in quinine sulphate: Five grammes of the preparation under examination are dissolved in 11 C.c. normal sulphuric acid, by warming to about 60° C. The solution is evaporated in a weighed dish to incipient crystallization, and the crystalline mass, formed on cooling, mixed with a sufficient quantity of distilled water to bring it up to the original weight. The acid sulphate of cinchonidine goes into solution. The solution is separated from the undissolved acid sulphate of quinine, shaken up with excess of soda and 25 Gms. ether, the latter of which brings the separated cinchonidine in crystals to the surface of the liquid, where they can be collected and weighed. The method is not absolutely accurate, but suffices to detect a mixture of two per cent cinchonidine with quinine sulphate.—*The Analyst*, 1885, 148.

Spirit of Nitrous Ether.

AT the late meeting of the British Pharm. Conference, Mr. A. H. Allen described a number of experiments to demonstrate the strength of the spirit of nitrous ether, commonly known as "sweet spirit of nitre." While the freshly made preparation contains from two to four per cent of real nitrous ether, on keeping, it suffers gradual deterioration, but this becomes much greater when the spirit is diluted with water. Hence the author considers the intentional addition of water to sweet spirit of nitre for the purpose of adulteration to be very reprehensible. Mr. Allen expressed a doubt whether any appreciable quantity of the active principle remained in an aqueous mixture which had been made several days. Hence, when spirit of nitrous ether is to be given as a medicine, a certain measure of previously assayed spirit should be added to water and given immediately.—*Chem. and Drugg.*

Palliative for Painful Digestion.

DR. GERMAIN SÉE recommends the following remedy for the pain experienced by persons suffering from dyspepsia or cancer of the stomach.

Tincture of Hyoscyamus,
Tincture of Conium, of
each..... 150 grains.
Tincture of Gentian.... 75 "
Essence of Anise..... 10 drops.

From ten to thirty drops are to be taken with each meal.—*N. Y. Med. Journ. from Union Méd.*

[Chloroform water will also be found a useful remedy in doses of one to three drachms, with water.—*Ed. AM. DRUGG.*]

Relative Safety of Anæsthetics.

DR. B. W. RICHARDSON, of England, gives the following summary of the anæsthetics from the point of view of their safety:

Safe.—Ethyl bromide, ethyl chloride, sulphuric ether, ethene (olefiant gas), ethene chloride, methyl bromide, methyl chloride, methyl ether, methine chloride, methane (marsh gas), nitrous oxide—methyl ether, in his opinion, being the safest of all.

Useful, but requiring care—chloroform, ethene dichloride.

Of doubtful value.—Amyline, amyl chloride, butyl chloride, benzol, carbon disulphide, carbon dioxide, carbon tetrachloride, methyl alcohol, methylol, spirit of turpentine.

Dangerous.—Amyl hydride, butyl hydride, carbon monoxide, ethyl hydride.

Strophanthin.

THIS new diuretic is derived from *Strophanthus hispidus* (S. Kombi, Oliver) from which negroes in Mun-gua, Senegambia, and Guinea, prepare an arrow-poison called *Kombi* or *inée*. The plant is a woody climber, flowering in October or November. The follicles, 10 to 12 inches long, contain from 150 to 200 seeds weighing each about half a grain and bear a plume-like tuft at the extremity of a delicate stalk. The active principle is crystalline, intensely active, and allied to digitalin. The hypodermic dose is $\frac{1}{16}$ to $\frac{1}{8}$ of a grain.—*PROF. FRASER in Br. Med Jour.*

Oxygen is reported by Kirnberger (*Deutsche Med. Wochenschr.*) to have been used successfully in a case of leuchæmia in which arsenic failed. Its inhalation resulted in increase of strength, diminution of the swelling of the spleen and the number of white blood-corpuscles, and restoration of the proportion of red corpuscles.—*N. Y. Med. Journ.*

So-called Soluble Essence of Ginger.

AS early as 1859, Mr. Barnard Proctor presented a process for a soluble essence of ginger, to be used in making syrup. It was as follows: 6 drs. tincture of ginger, 6 ounces of water, 2 grains alum, 10 minims (drops) of liquor potassæ. Mix; let stand and filter. This essence is a soluble one, but is deficient in aroma. In answer to a query: How to prepare a fluid extract of ginger that will not turn white on being added to water, Mr. J. L. A. Creuse gave the following: Fluid extract ginger, 1 pint; water, 2 pints; carbonate magnesia, 2 ounces. Mix, shake frequently during twenty-four hours, filter, evaporate to $\frac{1}{2}$ pint; add $\frac{1}{2}$ pint alcohol. In 1879, Mr. John C. Thresh presented to the British Pharmaceutical Conference two valuable papers. One was an analysis of the ginger rhizome (root), and in the other he gave an improved formula for the soluble essence of ginger, as follows: Add slaked lime to one part of strong tincture of ginger till it ceases to lose color; filter, add proof spirit through the filter to make two parts; add dilute sulphuric acid until the yellow color suddenly disappears; after twenty-four hours filter, dilute to four parts with water; add powdered pumice or silica and filter. In 1884, a paper was read before the Michigan Pharmaceutical Association, by Mr. Carl Riebe, on syrup of ginger. Mr. Riebe's process is as follows: A sufficient quantity of filter paper, in small pieces, contained in a wide-mouth bottle, is saturated with fluid extract of ginger, exposed to a heat below 140 degrees Fahrenheit, until the alcohol is evaporated. Add water, shake repeatedly, and macerate twenty-four hours; transfer to a strainer, and drain off the liquid. Transfer the pulp to a percolator, in the bottom of which is a layer of fine purified sand; pour on the strained liquid, and after this has passed through the pulp and sand, add a sufficient quantity of water to make the desired measure. Then dissolve the sugar in this percolate. These processes or modifications, viz., Creuse's, Thresh's, and Riebe's, but principally the first two, are the processes in use to-day.

In speaking of ginger ale preparations, the writer says: "It will be noticed that in nearly all the formulas for ginger ale, capsicum is found. Of course this is for the reason that a sufficient pungency to satisfy a popular demand cannot be obtained from ginger alone. That this is so is also plainly indicated by the well-known fact that a largely increased sale of oleo-resin of capsicum has followed very closely on the increase in the use and sale of ginger ale and allied preparations." This unrestricted use of capsicum cannot be too severely condemned. Physicians and judges of fine quality ginger ale are opposed to its introduction, on the ground of being unnecessary and hurtful.

Hydrocyanic Acid as a Fermentation Product of Linseed Meal.

W. O. SENIOR, following a notice by A. Jorissen in the *Bull. Acad. Roy. Belg.* that "a mixture of linseed meal and warm water, when kept at a temperature of 25° C., and then distilled, yields a distillate containing hydrocyanic acid," made a series of experiments and reported the results at the Br. Pharm. Conference. The result of his experiments showed that time, alkalinity, and exposure to air influence the amount of acid produced; time effecting the result chiefly within the first 24 hours, after that only to a small extent, whilst the maximum quantity is obtained when all three conditions are united.—*Chem. and Drugg.*

Brierwood Pipes.

THESE pipes are made from the root of *Erica arborea*, a species of heath, and not from the root of a brier, as is generally supposed. The roots are chiefly collected on the hills of the Maremma in Italy, where they are found of great size. They are cleansed from earth and decayed portions, cut into blocks of suitable size, boiled gently for twelve hours, to give them the rich coloring for which the pipes are noted, and the blocks are then packed in bags containing from forty to one hundred dozen each.

Many of the finished pipes are made in Sienna and Grosseto; others in St. Cloud, France, and it is from the latter source that they derive the name of *pipes de Bruyère*, which has been corrupted into brier-root pipes.

Copaivi Emulsion (Van de Walle).

THE author emulsionizes copaivi balsam according to the following recipe:—Balsam of copaivi, 50; white sugar, 25; honey, 25; distilled water, 5; essence of mint, 0.5; carmine (to color), q.s.

The balsam, sugar, honey, and water, are mixed together in a basin, and slightly heated for ten minutes with constant stirring. The essence and color are added when the mixture is completely cold. The preparation forms a red gelatinous product, almost entirely devoid of the odor of copaivi.

French Sulphur Ointment.

THE ointment largely used in France in the treatment of scabies, etc., known as Fournier's ointment, from the name of Dr. Fournier, who first prescribed it, is made as follows:—Sodæ carb., $1\frac{1}{2}$ ounces; sublimed sulphur, 3 ounces; gum tragacanth, 15 grains; glycerin, 6 fluid ounces.

It is said to be less irritating than most other compound sulphur ointments. The pure English sulphur ointment, which consists simply of flour of sulphur and lard, has no irritating action whatever, and is found to be quite as effective as many compound ointments, which, like the above, contain either an alkaline sulphide, or a mixture of sulphur with some alkaline substance.

A New Reaction for Albumin.

IF a solution containing albumin be acidulated with formic acid, and a solution of gold chloride (0.1%) be added drop by drop, the mixture being warmed, bubbles of gas are formed on the sides of the test-tube; the solution turns first rose-red, and then assumes a beautiful purple-red; on further addition, a blue color; finally, a blue flocculent precipitate separates out. The rate of change to blue is in proportion to the dilution of the solution of albumin. The blue or violet coloration is also caused by other organic substances, such as grape sugar, starch, glycerin, leucin, tyrosin, creatin, uric acid, and urea. Pure gelatin gives a dichroic brown or reddish coloration. Impure gelatin (probably containing albumin) gives, when sufficiently concentrated, the purple color. Gum solutions give also a beautiful purple-red coloration, which differs, however, from the albumin reaction by changing to orange-yellow on the addition of potash or soda. The reaction can be made to succeed with pure albumen solution of a dilution of 1 to 1,000,000. The presence of salt, urea, uric acid, or grape sugar does not interfere, when not present in excess; otherwise it is only necessary to use more formic acid and gold chloride.—*D. OXENFELD, in Centralbl. f. d. Med. Wiss.; The Analyst.*

The Assay of Belladonna; Estimation of Alkaloids in the Leaves.

(From a paper read at the Brit. Pharm. Conference, abstracted in *Chem. and Drugg.*)

In a previous communication to the Pharmaceutical Society, Prof. Wyndham Dunstan and M. Francis Ransom described a new and simple process for the estimation of the alkaloids in the root of the *Atropa Belladonna*. This consisted in extracting the root with a mixture of chloroform and alcohol, and removing the alkaloidal salts from this mixture by agitating it with water. From the aqueous solution, the alkaloids are liberated by ammonia, and removed by chloroform. They had since sought to devise a reliable and convenient process whereby the alkaloids could be isolated without loss in a pure state from the leaves of the *Atropa Belladonna*. For this purpose, the method which had proved successful with the root had to be considerably modified. In extracting the leaves, absolute alcohol alone is to be preferred to a mixture of alcohol and chloroform. By continuous percolation with boiling absolute alcohol, the leaves can be freed from every trace of alkaloid. It was found that the best method of separating the whole of the atropine and hyoscyamine from the alcoholic liquid is to dilute it considerably with water acidulated with hydrochloric acid, and then to remove the chlorophyll and fat by repeatedly agitating it with chloroform. In this way an acid solution of the alkaloids is prepared, from which the bases may be readily obtained pure by adding excess of ammonia and extracting the alkaline liquid with chloroform. Chloroform is by far the best solvent for extracting atropine and hyoscyamine from an alkaline liquid. Ether, quite apart from manipulation difficulty, is required in much larger quantity to effect the same result.

A definite process for estimating the atropine and hyoscyamine in the leaves of *belladonna* is as follows: Twenty grammes of the dried and finely powdered leaves are well-packed in an extraction apparatus, and exhausted with about 100 C.c. of absolute alcohol. The alcoholic liquid is diluted with about an equal volume of water made slightly acid with hydrochloric acid. The chlorophyll, fat, etc., are then removed from the slightly-warmed liquid by repeatedly extracting it with chloroform until nothing further is removed by the solvent. The aqueous liquid is made alkaline with ammonia, and the alkaloids extracted by chloroform, by evaporating which a residue of pure alkaloid is obtained, and dried by heating it at 100° until a constant weight is attained. A specimen of dried foreign leaves contained 0.22 per cent of total alkaloid, and a specimen of English leaves which had been somewhat overheated in drying contained 0.15 per cent. But the authors believe that both specimens contain less alkaloid than English leaves which have been carefully grown and gathered.

Altitudes Least Liable to Malaria.

WHILE malaria belongs chiefly to low-lying districts, it may, under favorable conditions, exist at great elevations. On the Tuscan Apennines it is found at a height of 1,100 feet above the sea level, on the Pyrenees and Mexican Cordilleras 5,000 feet, on the Himalayas 5,400 feet, on the Island of Ceylon 6,500 feet, and on the Andes 11,000. Under ordinary circumstances, however, a certain moderate altitude affords immunity from malaria. The elevation of entire security is not positively known, but it has been approximated as follows: In Italy 400 to 500 feet, in California 1,000 feet, in

the Appalachian chain of the United States 3,000 feet, in the West Indies 1,400 to 1,800 feet, in India 2,000 feet. In any of these regions malaria may drift up ravines to an indefinite height.

Test for Diabetic Sugar.

PROF. SEEGEN, of Vienna, adopts the following mode of examining urine when diabetes is suspected. The urine is first filtered through *blood charcoal*. The charcoal is then washed repeatedly with distilled water, and the third or fourth washing is tested with Fehling's solution. The blood charcoal retains the substances which interfere with the reduction of the copper. The first washing sometimes fails to show the presence of sugar, but the third washing always will, if sugar is really present. It is claimed by Prof. Seegen that the use of *blood charcoal* is essential, bone charcoal being inefficient.—DR. McBRIDE in *Med. Record*, Oct. 17th, 1885.

On the Best Method of storing and Preserving Dried Vegetable Drugs.

A VERY large eproportion of our materia medica in every-day use consists of dried barks, flowers, leaves, woods, roots, fruits, and entire herbs. It is an admitted fact that, however carefully and perfectly these vegetable tissues may be desiccated, or dried, for preservation, they invariably retain a certain proportion of moisture. This, of course, varies very much in different vegetable products, but it is always present, and is a factor of which we have to take careful note if we would preserve these articles in a thoroughly efficient condition, and with their active principles unimpaired. If we take an average sample of any dried medicinal leaves, and inclose them in a tightly-stoppered bottle, we notice, after a time, that a fungoid growth sets in, more particularly in the upper part of the mass. In fact, the leaves become, in common parlance, mouldy or musty. The fact that the mould is noticed more particularly in the upper part of the bottle gives us a clue to the reason of this. The continually recurring changes of temperature (which on a hot shop-shelf, for instance, are very violent) volatilize and condense the moisture repeatedly. This condensation, taking place on the upper layers of the drug, causes moulding, and, perhaps, in many instances, sets up fermentations of various kinds. The result of these changes must of necessity be damaging in the extreme to the active principles of drugs, many of which principles are exceedingly delicate and unstable. Digitalis and coca leaves may be quoted especially as examples of drugs requiring extreme care to preserve their active principles intact.

It follows that the two main points to be observed in storing such drugs are—first, that they are not kept in hermetically sealed vessels and so deprived of free access of air; and secondly, that they are kept the year through in as equable a temperature as possible. Every well-appointed pharmacy should contain a set of shelves remote alike from hot gas at night and from external changes of temperature. The shelves should be adjusted so as to contain a set of tins with lift-off lids, like biscuit boxes, which boxes will answer the purpose. The tins on each shelf should reach to within an inch of the shelf above. From the edges of the shelves should depend a strip of leather, as in book-shelves, hanging just below the top edges of the tins on shelf below, and keeping the dust from their lids. The tops of the tins should have some fifty or sixty apertures perforated all over them. These perforations may be readily made by giving the lid a smart blow with a stout, sharp

bradawl, firmly held in the hand. This set of tins on shelves is far preferable to either drawers, parcels, or wooden boxes. Drawers, unless constantly used, have a habit of accumulating dust and cobwebs inside them to an alarming extent. Mites also often infest one drug from another throughout a whole range of drawers. Drugs also contaminate each other when of powerful odor. They are also liable to be strongly impregnated with the tenacious odor of deal or cedar from the drawers themselves. The same objections apply more or less to the storage of drugs in boxes. Paper parcels do not even give the protection of a wooden receptacle, and are also horribly dirty, it being almost impossible to keep them free from large accumulations of dust. Another objection to them is the difficulty of affixing, and keeping plainly visible, labels which can be read at a glance.—*Monthly Magazine*.

Chloral as an Antidote to Strychnine.

MR. FRANK W. TRUMAN writes to the *Chem. and Drugg.* (August) as follows:

The recent sad death of a country chemist from strychnine, and the statement made by a weekly newspaper, that "no antidote was given him, the deceased being passed that," induces me to relate my experience regarding the particular alkaloid mentioned, and the means by which I have successfully avoided any fatal results to my patients—patients who have always been quadrupedal ones—cats and dogs. Whether the higher animal, man, would be equally amenable to the same treatment successful with animals is at least worthy of trial on human beings, and that treatment is simply the exhibition of very large doses of chloral hydrate, repeated at every symptom of recurring spasm. Small doses are useless. I have had some eight or ten cases in the last four or five years, and have not lost one.

To illustrate the large doses I advocate, I quote one case, which, I think, was that in which I had to give the largest quantity. A small bull-terrier swallowed the whole of a 6 oz. packet of Battle's Killer, and was brought in to me in almost the last stage of strychnine poisoning. I administered directly between two and three drachms of chloral hydrate, and gave a saturated solution of the salt to the customer, with directions to give a teaspoonful on the recurrence of the least sign of twitching. I myself gave another dose of two drachms after business hours, and altogether the dog took nearly three oz. of chloral in the course of thirty-six hours, and completely recovered. It appears to me that no injurious effects follow the exhibition of chloral when even a small quantity of strychnine has previously been taken, and a few months ago I tested that idea in the case of a large hound, which had swallowed evidently, by the slightness of the twitching, but very little, and to which I gave eighty grains of chloral, and repeated the dose in a couple of hours, without the animal showing any signs of chloral poisoning, and with complete suspension of all strychnine symptoms.

This suggests whether the reverse process would be equally efficacious, and strychnine prove an antidote to chloral.

Volatility of Oxalic Acid.

In connection with a description of the reaction between phenol and nitrobenzol, in the *Journ. für prakt. Chem.*, 1885, 543, M. Siegfried makes the statement that oxalic acid sublimes a few degrees below 100° C. (212° F.), which fact is not recorded in any work of reference.

Testing Chloride of Lime.

THE Pharmacopœia Committee of the German Pharmaceutical Society recommends a modification of the process of assay of chloride of lime in the following manner.

Mix 3.55 Gm. of chloride of lime (chlorinated lime) with water, and dilute the mixture to 100 C.c. Then take 10 C.c. of this turbid mixture, add 1 Gm. of iodide of potassium and 10 drops of hydrochloric acid, together with a little gelatinized starch, and titrate with a normal solution of hyposulphite of sodium [containing 24.8 Gm. in a liter, same as that prescribed by the U. S. Ph.], of which not less than 20 C.c. should be consumed to discharge the blue color.

The German Pharmacopœia directed to take 0.5 Gm. of chloride of lime, to mix this with water and to titrate the whole of the mixture.

Objection has been made to this, because it is known that chloride of lime becomes unequal in strength, in the different layers of a package, by keeping, and a small sample of 0.5 Gm. removed for testing does not represent the average composition of the whole package. To remove this defect, the Pharm. Comm. now proposes to take a larger sample, 3.55 Gm., to mix it with water to 100 C.c., and to measure off 10 C.c. of the turbid mixture for assay. Of course, the chloride of lime is not completely soluble in the 100 C.c. of water, and the undissolved portion contains a considerable amount of the chlorinated lime which must be taken into account.

In our opinion, however, the proposed improvement is liable to cause greater errors than the official process. It will be practically impossible to measure off 10 C.c. of the turbid mixture so that it shall contain its exact proportionate part of the undissolved lime. If it be attempted to divide the 100 C.c. of mixture obtained into ten portions of 10 C.c. each, or, at least, to remove nine equal portions, even with the greatest care it will be found that the results of the assay will vary somewhat in the different portions. A skilled operator, of course, will succeed better in obtaining uniform results than the average pharmacist.

We think that the defect attempted to be remedied by the Germ. Pharm. Comm. can be removed in a much more simple manner. All that is necessary is to remove a somewhat larger sample from the original package—one which has been taken from several depths—mixing it thoroughly by rapid trituration, and weighing off either 0.355 Gm. or 0.71 Gm. of the mixture for the assay. If the former quantity is weighed off, the number of cubic centimeters of the volumetric solution of hyposulphite consumed will directly indicate the percentage of available chlorine in the sample. If 0.71 Gm. are weighed out, the number of C.c. of the test liquid must be divided by 2 to give the percentage of chlorine.

In the official test of the Germ. Pharm., it is not specially said that the hydrochloric acid must be added after the iodide of potassium. The Pharm. Comm. points out that this is necessary, since otherwise a loss of chlorine will take place.

The lesson to be learned from the above is that the assay process of the U. S. Ph., which is in all other respects correct, may be slightly improved and enlarged by adding the words here printed in italics:

If 0.71 Gm. of chlorinated lime, representing an average sample of the lot to be tested, be mixed with a solution of 1.25 Gm. of iodide of potassium in 120 C.c. of water, and 9 Gm. of diluted hydrochloric acid be then added, the red-brown liquid should require for complete decoloration not less than 50 C.c. of the volumetric so-

lution of hyposulphite of sodium (the number of C.c. consumed, divided by 2, indicating the percentage of available chlorine in the sample).

Salicylic Lemonade.

A BRITISH medical officer of the Sudan expedition suggested the following "hospital beverage," which was found practically useful in typhoid, scurvy, gout, and other fevers:

Squeeze the juice from ten lemons, and set it aside. Boil the fruit in half to three-fourths of a gallon of water for fifteen to twenty minutes. After standing six hours, take out the lemons, again press them, and throw the exhausted skins away. Add the juice and one-half ounce of citric acid to the liquid, boil for five minutes, and strain. While still hot add to it two hundred grains of salicylic acid, and stir until dissolved. Sweeten to taste with white sugar, and add enough water to make, of the whole, one gallon.

Unless preserved by the aid of a little brandy, the salicylic lemonade should be made fresh after two or three days.

To "brighten" its appearance, add, when cold, a little beaten white of egg, boil for three minutes, and filter.

Half an ounce of gelatin dissolved in the hot liquid before straining (previously soaked for five hours in cold water) will render the lemonade less harsh.—*Br. and Col. Druggist.*

Manna Mixture.

It is much to be regretted, says Mr. Joseph Ince, that manna has to so large an extent disappeared from English pharmacy. Abroad it is in constant use. I regard manna, dissolved in milk, as far as the treatment of children is concerned, to be a gift of God. It is a safe and effectual laxative, and does not *physic* an infant, the main thing to be avoided.

The following is a useful laxative mixture for an adult:—*Infus. rhei*, 4 ounces; *tinct. sennæ*, 6 drachms; *manna*, 1 ounce; *aq. cinnam.*, ad 6 ounces. *M. ft. Mist. Sumat quartam partem o. n. h. s.*

The following was Dr. Abernethy's favorite aperient mixture:—*Mag. sulph.* ½ ounce; *inf. sennæ co.*, 6 drachms; *aq. menth. vir.*, 1 ounce; *manna*, 2 drachms; *tinct. sennæ*, 2 drachms; *aq. puræ*, 2 ounces. *M. capiat coch. ij. mag. mane.*

French Pharmacy.

It has been decided in France that no pharmacist can refuse to receive into his shop any person who happens to have met with an accident in the streets, nor to deliver on the spot the various remedies that may be requisite in such a case. The French pharmacist only holds his right of opening a pharmacy on these conditions. He is bound to attend to the best of his abilities to any person who may be brought in disabled. He is not obliged to supply his drugs and remedies gratuitously, but he must supply them; and if the injured person is not able to pay for them himself, their cost will be defrayed by the Commissary of Police for the district in which the pharmacy is situated.

Finding a Deposit of Sienna.

Two years ago, the Pine Woods, near Lisbon, Me., could have been bought for \$5 an acre. To-day \$25,000 an acre is its estimated value. It is owned, *The Lewiston Journal* states, by E. N. Chamberlain, who leased it a few months ago to E. H. Caylor, of Columbus, Ohio. The earth of the tract is yellow, and has been pronounced by Professor Stanley, of Bates College, to be a variety of sienna. An expert pronounces it equal to the best Italian sienna. In the tract owned by Mr.

Chamberlain there are 100 acres, and the deposit, which lies from one foot to three feet deep, covers an estimated area of sixty acres.

The Alkaloid Tulipine.

THIS alkaloid is extracted from the garden tulip when fully developed; it occurs, probably, in every part of the plant, even in the brilliantly colored petals. It was discovered some little time back by Gerard, and next alluded to by Ringer in the *Edinburgh Medical Journal*. It acts as a powerful sialogogue, producing a considerable flow of saliva without exerting any action on the pupil of the eye.

Frogs poisoned by tulipine died with the heart in systole and with the same symptoms as those exhibited by animals poisoned with veratrine. Very little, however, is yet known about this new alkaloid, either chemically or therapeutically; it is supposed to be a muscular poison which acts upon the medulla and the nerves of sensation. Unlike many other alkaloids, it appears to have no action whatever on the pupils. It is not improbable that it will be found related to colchicine and scillitine, derived from plants of a similar nature.

Barnouvin's Belladonna Suppository.

EXTRACT of belladonna, 0.01 part; lard, 0.50 part; white wax, 1.00 part; cacao butter, 3.00 parts.

If these quantities are taken in grammes (for instance, cacao butter 3 grammes), the above proportions represent one suppository.

CORRESPONDENCE.

Butter Analysis.

Editor American Druggist:—

There is an item in the January number of your journal, present vol., to which you might like to add a word of explanation. It is in answer to query 1,393, paragraph *d*. The volume to which the liquid should be diluted previous to distillation is omitted. Of the 100 C.c. distilled, "100 C.c. are filtered off, etc.," and finally, "the reagent consumed is increased by one-tenth, etc."

Yours truly,

HENRY BARTLETT.

CHICAGO, Sept. 10th, 1885.

The liquid should be diluted to exactly 110 C.c., and of this, 100 C.c. should be distilled off. This distillate is then to be titrated with volumetric solution of soda.—*ED. AM. DRUGG.*

Sea Foam.

Editor American Druggist.

DEAR SIR:—In the July number I noticed a correspondent desired a formula for Sea Foam. He does not state for what purpose he desired the foam, but I infer he wishes it for a shampoo. We dispense an article of that description to our local barbers, and they all know it by the title "Sea Foam." It is:

Tr. Arnica..... 1 drachm.
Tr. Cantharides..... 2 drachms.
Water Ammonia.... 3 "
Alcohol..... ½ pint.
Soft Water..... ½ "

This produces a copious lather or foam. Yours respectfully,
E. F. PHILLIPS.

Hoyt's German Cologne.

Editor American Druggist.

The formula for "Hoyt's German Cologne" is known to us as follows:

½ *Alcohol*..... 5 galls.
Oil Bergamot..... 4 oz.
" *Lemon*..... 4 oz.
" *Neroli*..... 1 oz.
" *Sandal Wood*..... 2 oz.
Camphor..... ½ oz.
M. Let it stand fourteen days.

M.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,601.—Analysis of Urine (F. O. R.).

The most elaborate work on this subject is by *Neubauer and Vogel*, an English translation of which has been published by William Wood & Co. (see last number, page 70 of advertisements).

No. 1,602.—Harlem or Haarlem Oil (R.).

The composition of this is given in various ways.

Hager recommends to prepare it, when ordered, by combining with the aid of a gentle heat:

Oleum Lini Sulphuratum....	5 parts
Oleum Terebinthinæ.....	10 "
Oleum Cadinum.....	20 "

The first ingredient is prepared by boiling 16.6 parts of sublimed sulphur with 100 parts of linseed oil.

No. 1,603.—Bichloride of Mercury and Urea (E. A.).

This compound has recently been recommended (*Med.-Chir. Rundschau*) as a new antisyphilitic, to be administered hypodermically. It may be prepared by dissolving 2 parts of bichloride of mercury and 1 part of urea in 200 parts of distilled water, and filtering. This solution may then be used as it is, the dose being adjusted according to the necessity of the case: 5 minims being equal to about $\frac{1}{2}$ grain.

On evaporating the above-mentioned aqueous solution, no crystals of the compound can be obtained. This can be accomplished, however, by dissolving the two substances in alcohol, in the proportion of 270.5 parts of bichloride of mercury and 60 parts of urea, and evaporating. The resulting crystals, $\text{HgCl}_2 \cdot \text{CH}_4\text{N}_2\text{O}$, are but little soluble in cold water; decomposed by boiling water.

It will be seen that the solution first mentioned contains an excess of urea. This is probably done for the purpose of insuring the whole of the bichloride entering the double salt.

No. 1,604.—Sediment in Solution of Sulphate of Copper (F. O. R.).

This correspondent some time ago sent us a long series of queries, many of which do not admit of being answered in this Journal, as the answers would benefit perhaps only the inquirer, and it would be injustice to our other readers to take up space with matter not interesting to them. We make this remark here, intending it for the eyes of other correspondents who have in the past or may in the future put purely "personal" questions to us. We are, however, at all times willing to answer any query—if we can—that will be of use to more than one or only a few readers.

Now to the query: The writer reports that he has made test-solution of sulphate of copper from good commercial crystals and pure distilled water. After being filtered and set aside, the solution deposited a bluish cloud at the bottom. He wants to know what it is.

From the query we judge that the

writer is, as yet, unable to make a qualitative analysis himself, which alone can determine the exact composition of the deposit. Experience, however, points to the probability that it is composed chiefly of zinc and iron sulphates (partly basic), which metals are almost always present in commercial blue vitriol. Chemically pure sulphate of copper as a reagent, may be obtained either by throwing down metallic copper from a concentrated solution of the sulphate by electrolysis (a platinum electrode being used), or by precipitating the metal as sulphide (see U. S. Ph., under *Cupri Sulphas*), dissolving the washed sulphide in pure nitric acid, diluting with water, precipitating almost completely with ammonia, dissolving the washed precipitate in dilute sulphuric acid and crystallizing. The U. S. Ph. (page 393) directs to use "selected" crystals of sulphate of copper and refers to *Cupri Sulphas*, meaning thereby that these crystals must stand the tests of the U. S. Ph.

No. 1,605.—Filtering Shellac Varnish (E. J. H.).

Shellac varnish made with alcohol may be filtered without difficulty, if it is previously well shaken up with a small quantity of some inert powder, such as plaster of Paris, chalk, phosphate of calcium. About two ounces per pint is sufficient.

The varnish may also be rendered clear by mixing it with one-fourth its volume of benzoin or petroleum ether, shaking it frequently during one or two hours, and then setting it aside, when the clear alcoholic solution will collect at the bottom, and the benzoin, containing some fatty or waxy substances in solution, will float on top. After removing this layer, the alcoholic solution may, if necessary, be freed from nearly all benzoin odor by gently warming. If the shellac is first extracted, in coarse powder, by warm benzoin, it will afterwards furnish a clear solution in alcohol.

No. 1,606.—Pine-Needle Extract (U. G.).

Extract of pine-needles or pine leaves is said to be best made in the following manner. Put a suitable quantity of pine or fir leaves and young shoots into a still, with a sufficient quantity of water, and distil in the usual manner. Separate the volatile oil, which has passed over with the water into the receiver, pour the watery portion back into the retort, and continue this process for some time (some say "for two days"). Then transfer the residue in the retort to a sieve, collect all liquid running or dripping from the latter, evaporate it to the consistence of honey, and finally mix it with one per cent of its weight of the volatile oil. The resulting extract is a blackish-brown mass of an aromatic, fir-like odor, and an aromatic, astringent, and bitter taste.

The volatile oil (*Oleum Pini Sylvestris*), also called Fir-wool oil—official in the Brit. Pharm. of 1885—is colorless, or more rarely of a greenish or yellowish tint, mobile, of a balsamic odor, and has the spec. grav. 0.880 (according to Brit. Pharm., not below 0.870). It is distinguished from the similar oil of turpentine by not yielding a solid when treated with hydrochloric acid.

No. 1,607.—Glossy Blacking for Leather (M.).

We have seen the following recently recommended.

To 3 pounds of boiling water add 2 oz. of gum Senegal, 1 oz. of transparent glue (previously soaked in water), $\frac{1}{4}$ oz. of white castile soap, 2 oz. of brown sugar. When the solids are dissolved, add 8 oz. of white wax, and, after this is melted, $2\frac{1}{2}$ oz. of alcohol. Stir well and allow to cool, occasionally agitat-

ing. When cold, intimately mix with it 3 oz. Frankfurt black.

The mass is applied in a thin layer by means of a soft brush, upon the leather, and finally polished with a stiff brush.

Frankfurt black is very finely divided carbon, prepared by carbonizing wine-yeast and skins of grapes.

BIBLIOGRAPHY.

PRACTICAL AND ANALYTICAL CHEMISTRY. Being a Complete Course in Chemical Analysis. By HENRY TRIMBLE, Ph.G., Professor of Analytical Chemistry in the Philadelphia College of Pharmacy. Illustrated. Philadelphia: P. Blakiston, Son & Co., 1885, 94 pp. 8vo. \$1.50

THE contents are arranged under the headings **PRACTICAL CHEMISTRY**: I., Preparation and Properties of Gases; II., Preparation of Salts. **QUALITATIVE ANALYSIS, Bases** (embracing reactions of potassium, sodium, lithium, ammonium, barium, strontium, calcium, magnesium, manganese, zinc, cobalt, nickel, iron, cerium, chromium, aluminium, arsenic, antimony, tin, gold, platinum, mercury, bismuth, copper, cadmium, silver, and lead). **Acids, Detection of Bases and Acids, Reactions and Tests of Organic Compounds**; **QUALITATIVE ANALYSIS, Gravimetric Estimation** with examples in barium, chlorine, copper, sulphuric acid, potassium, nitric acid, calcium, and carbonic acid, and **Volumetric Estimation, i. e., oxalic acid, sodium hydrate, potassium bichromate, iodine, sodium hyposulphite, and silver nitrate.**

To aid in laboratory work, the book contains numerous tables where in the main points are summarized.

A TEXT-BOOK OF PHARMACOLOGY, Therapeutics, and Materia Medica, by T. LAUDER BRUNTON, M.D., D.Sc., F.R.S., etc., adapted to the United States Pharmacopoeia by Francis N. Williams, M.D., Boston, Mass. Philadelphia: Lea Brothers & Co., 1885, pp. 1,035, 8vo.

THE author is best known in the United States as the able editor of *The Practitioner* and as a writer upon therapeutics. He says in the preface that the work was nearly ready for publication fifteen years since, but on going over it to give the manuscript a revision before sending it to the printer, he attempted some improvements, and the result has been that closer study, extended experience, and the delays incident to other engagements, have resulted in a new work.

Consistently with the progress of medical education and the development of a profession devoted to pharmacy exclusively, much of the matter relating to materia medica formerly taught to medical students has been omitted. The space has been more than filled by a description of the physiological action of drugs—something of far greater importance to those for whom the work is primarily intended.

The subject matter is arranged in six sections.

1. In the first section the topics are the general relations between the organism and substances affecting it; circumstances which affect the action of drugs on the organism; action of drugs on protoplasm, blood, low organisms, invertebrata, muscle, nerve, spinal cord, brain, organs of special sense, respiration, circulation, surface of the body, digestive system, drugs and tissue changes; action of drugs on excretion and on the generative system; methods of administering drugs; antidotes; antagonistic action of drugs and dosage.

2. The section on General Pharmacy

covers 28 pages and relates to 40 forms in which medicines are used.

3. Inorganic materia medica embraces hydrogen, oxygen, ozone, carbon, sulphur, and the halogens, acids, metals (*dyad metals*, e. g., metals of the alkaline earths and earths—heavy metals); *pentad metals*, e. g., nitrogen, phosphorus, arsenic, antimony, and bismuth; iron and manganese.

4. Organic materia medica, viz., carbon compounds under the head of fatty series and aromatic series.

5. Vegetable materia medica, under which a botanical classification is adopted.

6. Animal kingdom. This also is arranged according to a scientific basis of classification.

A general index, index of diseases and remedies, and a bibliographical index complete this work. To show the completeness which characterizes the whole, we may say that the bibliographical section alone, in fine type, occupies 41 pages, and forms a most valuable guide to the student who desires to extend his knowledge beyond the information here conveyed.

A valuable feature is the comparison between the drugs and preparations of the U. S. and Br. Pharmacopœias in adjoining columns or paragraphs. Abundant use is made of illustrations, and the choice of type and arrangement of matter are very favorable for convenient reference.

Altogether the work is the most satisfactory textbook on the subject in the English language.

JAHRESBERICHT UEBER DIE FORTSCHRITTE der Pharmakotherapie. Ein Nachschlagebuch für Lehrer der med. Wissenschaften, Aerzte und Apotheker. Herausgegeben von DR. EDUARD RUD. KOBERT, Assistent am Pharmakolog. Inst. der Univer. Strassburg. Vol. I. (Report for 1884); 1 vol. in 2 parts. 8vo. Strassburg, 1885. Price per year, \$4.40.

THIS annual report on the progress of *pharmaco-therapeutics* fills out a long-felt gap in medical literature, and will be found an indispensable work of reference for every progressive physician. It gathers from the current medical literature all new facts bearing upon the history, chemistry, or derivation, physiological effects, and therapeutic uses of drugs, giving brief abstracts of all important papers, and classifying the subjects under appropriate headings.

To show how the author treats his subject, we select the chapter which is headed: XV. *The Cocaine Group*, under which we find (a) the history of cocaine, containing, besides the previously known facts, quotations from and references to 6 recent papers; (b) the physiology and chemistry: abstract of 14 papers; (c) therapeutic effects: (1) in ophthalmology: abstracts and quotations of 70 papers; (2) in rhinology, otology, laryngology: 22 papers; (3) in uro-genital apparatus: 10 papers; (4) internally administered: 10

papers—the whole covering 26½ pages. This example will show the practical usefulness of the publication. The work is, by nature, a compilation, but its preparation involves an immense labor, as it necessitates a search through the whole medical literature of all countries. The author is well known as an authority on pharmacodynamics, and especially competent to edit a work of this kind.

ALPINE WINTER AND ITS MEDICAL ASPECTS: With Notes on Davos Platz, Wiesen, St. Moritz, and Maloja. By A. TUCKER WISE, M.D., L.R.C.P., M.R.C.S., etc. Second Edition. London: J. & A. Churchill, 1885, 121 pp., 8vo.

THE author gives a very comprehensive description of the Alpine climate and its adaptability to invalids, and likewise, in great detail, information relating to the places where the necessary accommodations may be obtained. Such matters as clothing, diet, exercise, meals, etc., are not overlooked, and a considerable space

ner the most important points connected with modern sanitary plumbing, that is, the proper disposal of waste matters. The work is divided into three parts, the first treating of Traps, their siphonage, evaporation, etc.; the second, of Lavatories, Waste Receptacles, and their waste attachments; and the third, of Soil and Drain Pipes, their jointing, arrangement, and ventilation. The whole is illustrated by seventy cuts.

Defective apparatus and methods are criticised, and the object of the writer is to describe in each case the best means of accomplishing the particular work in hand. As a result of his investigations and professional practice, some of the defects in the usual methods and apparatus employed in plumbing have been removed, and the improved apparatus which are known as the "Sanitas" appliances are fully described under their proper heads.

TREATMENT OF ZYMOTIC DISEASES by Syrups and Subcutaneous Injections

of Declat's pure Nascent Phenolic Acid, and Topical Treatment by Declat's Glyco-Phenique. Pp. 64. THE DECLAT MANUFACTURING Co., No. 86 Warren street, New York, Publishers.

A COPY of the above manual can be obtained by sending name and address on a postal card to the publishers.

Proceedings: Indiana Pharmaceutical Assoc., May 12th and 13th, 1885. — Pennsylvania Pharmaceutical

Assoc., June 2d, 3d, and 4th, 1885. — Alumni Assoc. of the Philadelphia Coll. of Pharm. for 1884-5. Alumni Assoc. of the Coll. of Pharm. of the City of New York. — Council of the Pharmaceutical Assoc. of the Province of Quebec. — Michigan State Pharm. Assoc., September 9th, 10th and 11th, 1884, 227 pp., 8vo, \$0.50. — Iowa State Pharm. Assoc., May 27th, 28th, 1884 (with portrait of J. H. Harrigan), 160 pp., 8vo. — Report of the Commissioners of Pharmacy of the State of Maine, pp. 13, 8vo. — Alabama Pharm. Assoc.: Fourth Ann. Meeting at Anniston, Ala., May 6th and 7th, 1885, 26 pp., 8vo. — Virginia State Pharm. Assoc.: Fourth Ann. Meeting at Charlottesville, May 19th, 20th, and 21st, 1885, 76 pp., 8vo. — California Pharmaceutical Society and College of Pharmacy for the years 1883 and 1884, 8vo.

Announcements: Department of Pharmacy, State Univ. of Iowa for 1885-6. — Department of Med. and Surg. Univ. of Michigan for 1885-6. School of Pharmacy of the Univ. of Michigan, 1885-6. — New York Post-graduate Med. School for 1885-6. — Montreal College of Pharmacy for 1885-6. — Department of Pharmacy of the Univ. of Wisconsin for 1885-6. — Pittsburg Coll. of Pharm., 1885-6. — Rose Polytechnic Institute, Terre Haute, Ind. — Massachusetts College of Pharmacy, 1885-6.



A SINGULAR ATTACK.

Doctor: "It is nothing but an attack of dyspepsia."
Wife (Who evidently does not yet appreciate the connection between last evening's business engagement which kept him out until very late and this morning's illness: "And what does that come from, doctor?"
Doctor: "That comes from—from the Greek, Madam."—*Bazar*.

is devoted to a description of a sumptuous Hôtel Kursaal, recently erected at the Maloja, in which every possible precaution appears to have been taken to render the inmates as comfortable as modern science and art will permit. There are several illustrations and plans to aid the text. Altogether the book is a model of its kind, and should be read by all who contemplate an Alpine winter-cure.

THE AUSTRALASIAN JOURNAL OF PHARMACY. Published under the Direction of the Pharmaceutical Society of Australasia, Melbourne. June, 1885. Vol. I., No. 1, 22 pp., 8vo. 10/6 per annum.

THIS new magazine is issued gratis to members of the Society in Victoria, New South Wales, New Zealand, Queensland, South Australia, Tasmania, Western Australia, and Fiji. It is published on the 15th of each month, and its contents consist largely of association and trade matters. S. M. Pettengill & Co., 37 Park row, are the New York agents.

LECTURES ON THE PRINCIPLES OF HOUSE DRAINAGE. Delivered before the Suffolk District Medical Society and the Boston Society of Architects, by J. PICKERING PUTNAM, Architect. Boston: Ticknor & Co., 1885, 125 pp. sm. 8vo, cloth, 75 cts.

THIS book lays before the reader in an attractive, forcible, and simple man-

American Druggist

Vol. XIV. No. 12.

NEW YORK, DECEMBER, 1885.

Whole No. 138.

WAFER-CAPSULE APPARATUS.

ADOLF VOMACKA, editor of the *Pharmaceutische Rundschau*, of Leitmeritz, Germany, has lately improved the apparatus and methods of Limousin in several particulars. The essential features consist in having the wafers attached in pairs, and the use of a peculiar apparatus for folding them upon each other at the point of union. The shape of the apparatus and the details of manipulation are readily understood with the aid of the adjoining illustrations. Two metallic plates are hinged together and provided with perforations upon which the open capsules are to be placed. A guard-plate shown in the second figure is then placed carefully over the nearest plate, and serves to protect the margins of the capsules beneath, from contamination by the powder inserted. A funnel, similar to that used in some of the modifications of Limousin's apparatus, is then inserted into an opening in the guard-plate and through it a powder is poured into the capsule beneath. The guard-plate is to be held steady with one hand, while a finger of the other hand, armed with a rammer, forces the powder evenly into the capsule. The funnel is then to be removed to another hole in the guard-plate, and the operation of charging repeated. When all the capsules on the side nearest the operator are filled, the guard-plate being still held firmly, the wafers on the opposite plate are to be wet by means of a roller covered with felt or cloth, to enable it to hold water. The farther plate is then to be tipped up as shown in the lower figure, the edge of the guard-plate serving to make a sharp bend at the junction of the wafers of each pair. Then the guard-plate is to be removed carefully, and the farther plate turned completely down, so as to bring the moistened edges of the wafers on one side in contact with the edges of those holding the powder, and the operation is completed by opening the plates, and removing the capsules with their contents.

Two sizes of apparatus are furnished; one having holes $1\frac{1}{4}$ inches in diameter, the other with holes $\frac{1}{2}$ of an inch across. The wafers to accompany them may be had of Mr. Vomacka, with any wording desired baked (not stamped) into them.

Until the apparatus appears in this market, orders or inquiries should be addressed to the inventor, who, after January 1st, will be in Prag. Until then he will continue in Leitmeritz.

Paraldehyde Suppositories.

PARALDEHYDE suppositories have been employed as a hypnotic in several insane asylums, according to Dr. A. Santer (*Der Fortschritt*, August 5th, 1885), with the most satisfactory results. Each suppository should contain 1 gramme (15 grains) of paraldehyde. They may be made by allowing the paraldehyde to solidify in a glass bottle, in a water-bath, with twenty per cent of paraffin, and this gelatinous mixture introduced into the suppositories.—*Therap. Gazette*,

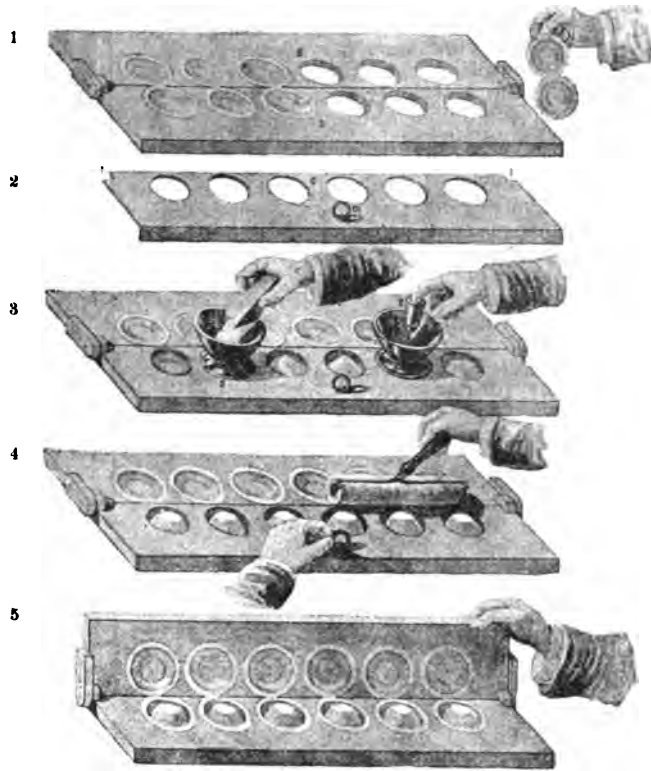
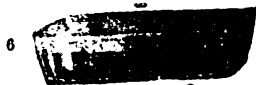
[ORIGINAL COMMUNICATION.]

SALICYLATE OF IRON.

BY H. T. EBERLE.

IN order to supply a demand recently for the above salt, I looked for a working formula, in the periodicals, but found none.

Double decomposition will not produce it, as the salt is soluble; I therefore devised the following process, which worked satisfactorily.



Vomacka's Wafer-Capsule Apparatus.

1, The open plates being charged with wafers; 2, Guard-plate; 3, Process of filling the wafers; 4, moistening the covers; 5, Folding the wafers together; 6, Trough for moistening the roller.

Take of sulphate of iron, 100 parts.
Carbonate of sodium....110 "

Dissolve the sulphate of iron and carbonate of sodium separately, each in two hundred parts of boiling water, and filter both solutions. Mix them, when cold, and allow the precipitate of carbonate of iron to subside. Pour off the supernatant liquid, and wash the precipitate with water until the washings are no longer rendered turbid with solution of chloride of barium.

Then pour the precipitate into an evaporating dish, and gently warm over a water-bath, adding salicylic acid until effervescence ceases and the precipitate is entirely dissolved.

Lastly, evaporate the solution on the water-bath to dryness and powder the residue.

WATERTOWN, WIS.

Lowest known Temperature.—K. Olszewski announces (in *Compt. Rend.*) that he has succeeded, by a modification of the apparatus previously employed by him for obtaining very low temperatures, in reaching the lowest degree so far attained, namely, 225°C . This was accomplished by the evaporation of solid nitrogen under a pressure of only 4 millimeters of mercury, that is, practically *in vacuo*.

[ORIGINAL COMMUNICATION.]

THE U. S. P. PROCESS FOR ASSAYING OPIUM.

BY HERBERT LLOYD, OF NEW YORK.

IN handling large quantities of opium for making its official preparations, the writer has been called upon to make a great many assays to ascertain the percentage of morphine in the drug. After repeated trials, it became evident that the U. S. P. process gave results considerably too low, as compared with some other published methods.

The U. S. P. process is briefly as follows:

Opium.....seven grammes, 7
Lime, freshly slaked,
three grammes, 8
Chloride of Ammonium,
three grammes, 8
Alcohol,
Stronger Ether,
Distilled Water..... aa q.s.

The opium and lime are triturated with 70 C.c. distilled water and agitated for half an hour; 50 C.c. of the liquid are filtered off, and 5 C.c. alcohol and 25 C.c. stronger ether are shaken with it. The chloride of ammonium is then added, and the whole shaken for half an hour and allowed to stand twelve hours. The morphine crystals are then separated, dried, and weighed. The result (five-sevenths of the whole), in grammes, multiplied by twenty, equals the percentage of morphine in the opium taken.

In order to prove that results thus obtained are incorrect, the following experiments were made.

Definite quantities of pure alkaloid morphine (instead of opium) were put through the above process, and when the results were weighed there was always an average shortage of about 0.08 Gm. on the morphine recovered from 50 C.c. It was evident that the loss was occasioned either by the decomposition

of the morphine, or by the solvent action of some of the reagents upon it. The chloride of ammonium, for instance, of which 3.0 grammes are used, when 0.1 Gm. would be ample theoretically, might have the latter effect. To test this, experiments were made with pure morphine, as before, but 0.1 Gm. of chloride of ammonium was used in each case. This amount was found insufficient to entirely release the alkaloid, indicating that the 50 C.c. of liquor from which the morphine was precipitated contained more lime than the same quantity of lime-water (on which the 0.1 Gm. chloride of ammonium was based) would contain. This was proved to be the case, as will be seen hereafter. Further experiments were made, using 0.2 Gm. chloride of ammonium, but in the results the loss was almost as great as when 3.0 Gm. of the reagent were used. Next, to ascertain if the loss was *invariable* (as was first supposed), regardless of the amount of morphine used, the following four assays were made.

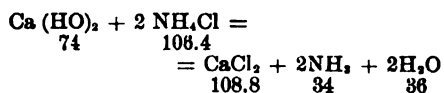
1.0 Gm. morphine was put through the U. S. P. process and lost 0.089 Gm. on $\frac{1}{2}$ (50 C.c.); 0.75 Gm. lost 0.085 Gm. on $\frac{1}{2}$ (50 C.c.); 0.5 Gm. lost 0.070 Gm. on $\frac{1}{2}$ (50 C.c.); 0.25 Gm. lost 0.060 Gm. on $\frac{1}{2}$ (50 C.c.).

These experiments were repeated, and gave practically similar results, showing that the loss was in direct proportion to the quantity of morphine present.

As previous experiments showed clearly that the presence of morphine increased the solubility of the lime, and as an increase of lime, of course, means an increase of free ammonia, it was assumed that the variation in loss might be largely due to the solvent action of that alkali. The loss, too, was found to be slightly increased by the 5 C.c. of alcohol, which is added before precipitating.

The solubility of morphine in water of ammonia must be determined by further experiment, but the writer found that 50 C.c. of distilled water, 0.25 C.c. concentrated water of ammonia (corresponding to the amount of ammonia set free by the lime) and 5 C.c. alcohol readily dissolved 0.08 Gm. of the alkaloid, but the same liquor without the ammonia dissolved but 0.02 Gm.

In the reaction which takes place when the morphine is precipitated,



74 parts of lime will set free 34 parts of ammonia.

Now the amount of lime in 50 C.c. lime-water would be about 0.066 Gm., but when morphine is added, it will take up more lime (as was stated before), and in this abnormal lime-water more morphine is dissolved than in ordinary lime-water. These two facts are proved by what follows.

Seventy C.c. lime-water and 1.0 Gm. morphine were shaken for several hours, but the morphine failed to dissolve, 0.07 Gm. being recovered on filtering out the residue and drying it. That 1.0 Gm. of morphine is soluble in 70 C.c. lime-water with an excess of lime will be seen from the next experiment, which proves that lime and morphine are mutual solvents.

1.0 Gm. pure morphine and 1.0 Gm. pure lime were shaken with 70 C.c. fresh lime-water, the residue washed with the same lime-water, dried rapidly, and weighed. The recovered lime weighed 0.911 Gm., 0.089 Gm. being dissolved. 1.0 Gm. lime treated in the same way with 0.5 Gm. morphine lost but 0.027 Gm. From this it will be seen that the 50 C.c. of assaying liquor will contain 0.066 Gm. lime naturally, and (if 1.0 Gm. morphine was to be assayed) in addition 0.062 Gm. lime ($\frac{1}{2}$ of 0.089 Gm.) which the morphine dissolved, and would set free 0.058 Gm. ammonia. Thus:

$$74 : 128 :: 34 : 58$$

Further assays were made on different quantities of morphine—of course always less than 1.0 Gm.—using 70 C.c. lime water alone (in place of 3.0 Gm. lime and 70 C.c. distilled water), and the loss was *uniformly* about 0.060 Gm. morphine, which was to be expected.

Hence it follows that the more morphine present in the opium to be assayed the greater will be the amount of lime dissolved and of ammonia set free, and, as a result, the greater loss of morphine.

The above facts, it is hoped, demonstrate clearly that in all assays made by the U. S. P. method 0.06 Gm. to 0.09 Gm. should be added to the result, according to the amount of morphine recovered.

It would doubtless be preferable to avoid the loss rather than allow for it, but after a number of attempts it was found to be impossible if lime was used, and as this process is so excellent in other respects (giving clean morphine, and being very simple), it would be unwise to reject it, providing the loss which the writer has tried

to account for is always allowed, and in fairness it always should be. The writer has been informed by a chemist engaged in the manufacture of morphine that he always in working the opium obtained more morphine than an assay by the U. S. P. process had led him to expect.

NEW YORK, Nov. 12th, 1885

The Metric System and our Apothecaries' Weights and Measures.

THE writer has for several years been an earnest advocate of the adoption of the Metric System in this country for medical and pharmaceutical purposes. Upon closer study, however, of the special requirements of medicine and pharmacy as to weights and measures I am led to believe that the decimal system does not fulfil these requirements. The question as to what system of weights and measures we shall use in medicine and pharmacy is one of such great importance that the facts herein presented ought to receive earnest consideration.

Believing that my past activity in attempting to further the introduction of the Metric System in the practice of medicine and pharmacy in the United States is somewhat generally known, and in view of the fact that my efforts in this direction have for several years been the subject of warm praise from some and equally unstinted condemnation from others, I deem it proper to publish briefly the reasons which have impelled me to reverse my opinions. I have not arrived hastily at these conclusions, and I have to frankly acknowledge that my former position on this question was possible only from my then insufficient knowledge of some of its important but not so obvious bearings.

In order to construct a practical system of weights and measures for the purpose of the physician and pharmacist it would seem to be of the highest importance to determine what would be the most suitable and convenient smallest unit of fluid measure. The fact cannot be ignored that fluid measures are necessary in the administration of liquid remedies, and that, therefore, consistency demands the use of fluid measures also in prescribing, dispensing, and preparing medicines. The *drop*, no matter how variable in size it may be shown or admitted to be, still remains a convenient and familiar object by which to not only fix in the mind an approximate quantity but to actually measure doses. Any quantity less than a drop would clearly be an impracticable unit; whilst the *minim* has by long experience been found a most useful unit, *solely because of its nearness to the average drop of most liquids*. The Metric System has no unit of fluid measure less than the Cubic centimeter, which is equal to 16.231 minims and therefore much too large. Fractional parts should be avoided as much as possible, and hence a minim is none too small.

The next step is to fix upon a weight unit which shall be commensurable with our smallest unit of fluid measure. The nearer approach then to a drop of water would be about one grain. The Metric System has nothing to offer but the decigramme, equal to about one and one-half grain.

For fixing the strength of medicinal preparations, especially liquids, and for the easy subdivisions of doses, it is most convenient to have units of weight and measure which shall be not only parallel and commensurable, but also capable of several progressive subdivisions by two into smaller units without fractions until the number one is reached. The Metric System has several parallel and very nearly commensurable units of weights and measures—the liter and kilogramme, the

deciliter and hektogramme, the cubic centimeter and gramme, etc.—but, being a decimal system, its units are divisible by two into the next lower units only once without striking fractions. Our American apothecaries' weights and measures are in this respect preferable to the Metric System, and if so modified as to render the several units (already parallel) commensurable, our ounces, drachms and grains, and fluid-ounces, fluidrachms and minims, would give us a very satisfactory system. This might be done by making our troy ounce exactly equal to the weight of one fluidounce of water at the most common room temperature—that temperature at which we ordinarily do our work in our laboratories and drug stores—our drachm exactly equal to a weight of a fluidrachm, and the grain equal to the weight of a minim of water at the same temperature. If, in addition, we should change the subdivision of the drachm and fluidrachm so that one drachm shall be sixty-four instead of sixty grains, and a fluidrachm sixty-four instead of sixty minims, this system would be perfect. We would then have:

- 1 U. S. Apothecaries' Ounce =
1 U. S. Apothecaries' Fluidounce.
- 1 U. S. Apothecaries' Drachm =
1 U. S. Apothecaries' Fluidrachm.
- 1 U. S. Apothecaries' Grain =
1 U. S. Apothecaries' Minim.

Also

$$\begin{array}{l} 64 \text{ Grains} = 1 \text{ Drachm.} \\ 8 \text{ Drachms} = 1 \text{ Ounce.} \end{array}$$

And

$$\begin{array}{l} 64 \text{ Minims} = 1 \text{ Fluidrachm.} \\ 8 \text{ Fluidrachms} = 1 \text{ Fluidounce.} \end{array}$$

The ounces would be divisible into halves, quarters and eighths, expressed in drachms without fractions, and into sixteenths, thirty-seconds, sixty-fourths, etc., expressed in grains or minims without fractions; and the drachms would be divisible into halves, quarters, eighths, sixteenths, thirty-seconds and sixty-fourths, expressed in whole grains or minims.

In the Metric System we find it inconvenient to write for any of the subordinate units. The gramme and the cubic centimeter are universally used. Hence fractions are unavoidable. Of late it has been shown that the use of the decimal point is fraught with danger to human life, which certainly ought not in any way or degree be dependent upon a frequently misplaced, misinterpreted, omitted, duplicated or illegible dot.

Whilst we have assumed that the gramme and cubic centimeter are commensurable, it is to be remembered that a cubic centimeter of water weighs one gramme only when at the unusual temperature of +4° C. and *in vacuo*, and that unfortunately the kilogramme of the Archives is too light by about nine grains, so that in reality a liter of water at 22° C., which I assume to be the mean temperature of our work-rooms, is not 1,000 Gms. but only about 997.4 Gms.

The value of our fluidounce should be first fixed. It might be made exactly equal to 32 cubic centimeters, in order to provide at once a convenient and simple connection between the Metric System and our apothecaries' weights and measures without materially altering the present value of the fluidounce.

If we assume that the wine gallon is 231 cubic inches, then our present U. S. fluidounce is equal to 29.573 cubic centimeters. To increase it to 32 cubic centimeters would be to make it about $\frac{1}{4}$ larger than it now is. Inasmuch as the fluidounce is a unit referred to almost exclusively for stating the quantities of diluents and menstrua, this change would surely not be a

serious one. If we should then make our apothecaries' ounce the exact equivalent of the weight of one such fluidounce of pure water at 22° C., weighed in air, this would be equal to 31.91 Gms., instead of 31.1035 Gms., which it now is. This would amount to a difference of about 2½ grains for every 100 grains or about 2½ per cent; or in other words, the present troy ounce would be ⅙ smaller than the new ounce.

Next, we could divide the new fluidounce and the new ounce into into eight fluidrachms and eight drachms, respectively, the difference between the old and new drachms and fluidrachms being, of course, proportionately the same as between the old and new ounces.

Finally, the new fluidrachm might be divided into 64 new minims, and the new drachm into 64 new grains. The new minim would then be exactly ⅙ cubic centimeter, or about ⅙ larger than our present minim; and the new grain would be only 2.46 milligrammes (or about) ⅙ smaller than our troy grain.

A new fluidounce equal to 32 cubic centimeters, and a new ounce of 32 Gms. would not be as desirable as a fluidounce weighing exactly one ounce when referring to water at 22° C. (71.6° F.), as 32 cubic centimeters of water does not weigh 32 Gms. either at +4° C., or at +22° C.

In my little manual of Weights, Measures, and Specific Gravity, just published, these data will be found more fully commented upon. On pages 45 and 46 of the manual referred to, the exact difference between the several corresponding old and new units are stated, and on page 36 it is suggested that if these reciprocal relations between our unit of weight and measure should be established, our old grain weights and fluid measure graduates could still continue to be used until gradually replaced by new ones without the slightest confusion or disadvantage. The difference between the new ounce and the troy ounce would be less than 13 grains; between the new drachm and the old drachm about 1½ grains; between the old grain and the new grain the difference would be as if 26 grains had been taken instead of 27. As to the fluid measures, the differences between the old and new fluidounce would be less than 40 minims; between the old and new fluidrachm less than 5 minims; and between the old and new minim the difference would be as if 40 minims should be taken instead of 41. Yet, with these trifling modifications in the accepted values of our units of weight and fluid measure we could at once insure: 1. Parallel units; 2. Commensurability; 3. Divisibility of the larger units into halves, quarters, eighths, sixteenths, etc., expressed in whole numbers of the lower units, and thus the avoidance of fractions to the greatest possible extent.

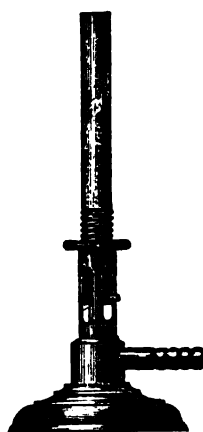
Even if our present apothecaries' weights and measures should remain unchanged, they are to be preferred to the Metric System, because they are so nearly what they ought to be that it would seem to be a grave error to discard them in favor of a system which has been found to be so hazardous by reason of its unavoidable decimal fractions and decimal point.

In the absence, however, of any fixed legal standards for the United States, why should we continue to use the troy ounce with the peculiar (apothecaries') subdivisions adopted by the London and Edinburgh Colleges, and their special apothecaries' fluid measures (all of which we inherited from England in colonial times, and which have since been abolished in Great Britain) without either legalizing them, fixing the values of their units, or modifying them so as to serve their special uses as perfectly as pos-

sible, especially as those weights and measures are used by no one but physicians and pharmacists?

A new, complete, and harmonious system of weights and measures for this country, such as would merit permanent adoption, would, of course, be preferable; but in view of the prevailing diversity and confusion, it may be considered sufficient to remodel the special weights and measures used in medicine and pharmacy independently of those used in general commerce.

The plan here suggested is not the only one which seems practicable; but if we would have the weights and measures of pharmacy bear simple relations to the weights and measures of modern science, the methods open to us are to either make our fluidounce exactly 32 cubic centimeters and to make the troy ounce equal to the weight of the fluidounce of water at whatever may be deemed the most suitable standard temperature, or to make an apothecaries' ounce of such



Muencke's gas burner.

size that 32 of them shall correspond to the weight of a liter of water at 22° C. One liter of pure water at 22° C. weighs 32.067 of our present apothecaries' ounces, and the size of the ounce might be slightly increased so that only 32 ounces (instead of 32.067) shall represent the liter. Then the fluidounce could be made to represent the volume of one ounce of water at 22° C. The first-named plan is preferable.

Either of these plans would connect our weights and measures with the Metric System and its primary basis. If we were to attempt the construction of an entirely new system from beginning to end, based upon either the seconds pendulum or the quadrant of the earth, ignoring all weights and measures at this time in use, the task would probably be accomplished in vain, if at all. —PROF. OSCAR OLDBERG in *The Pharmacist*.

IMPROVED BUNSEN'S BURNER.

DR. ROBERT MUENCKE has introduced an improved Bunsen's burner. The principal innovation consists in this, that the new burners have much larger openings for the admission of air, and that the latter is regulated by the higher or lower position of the burner-tube. In this way either a bright luminous flame may be produced by completely shutting off the supply of air, or a colorless heating flame may be produced gradually or suddenly. The raising or lowering of the burner-tube is effected in one of three ways: either by a screw on the lower end of the tube working in the base, or by means of a loose nut, or by pushing the burner-tube into the base or drawing it out, as desired, the friction of a close-fitting joint serving to retain the tube in place and the screw-thread being omitted. We illustrate only the second-named variety. —*Zeitsch. f. anal. Chem.*, 1885, 420.

Decolorized Solution of Iodine.

MR. H. N. DRAPER, after reference to the inutility of the combination of iodine with carbolic acid, sodium acetate or hyposulphite, and the iodate and iodide of ammonium, speaks of the observation of Hlasiwetz that resorcin, in common with orcin and phloroglucin forms loose combinations with iodine, and says that he was thereby led to attempt a solution of iodine which should possess its therapeutic value without coloration. He says:

When an iodine solution is added to an excess of a solution of resorcin, the former is at once decolorized. Nor does this solution give the starch reaction of iodine. The preparation of a decolorized solution of iodine, by means of resorcin, may be effected in several ways. The iodine may be, for example, dissolved in anhydrous ether and gradually added to the warm solution, or chloroform or carbon bisulphide may be used in the cold, and the resorcin solution will gradually, upon agitation, withdraw the iodine from these solvents. The quantity of iodine which can be in this way decolorized depends, not only upon the proportionate quantity of resorcin employed, but upon the quantity of water involved.

The solution becomes paler in tint after some days, especially in full sunlight, but never quite colorless. When combination has been effected, neither heating in a sealed tube nor exposure to a cold of -4° C. causes any alteration in the tint of the solution. The solution, when evaporated, either in vacuum or over sulphuric acid under a bell-glass, becomes darker in color, and finally deposits the resorcin in well-defined crystals, with which the iodine is entangled, but from which it at length evaporates. But if, before this takes place, the quantity of water originally present be added, the resulting solution assumes its original tint. The addition of strong sulphuric acid at once withdraws the whole of the iodine from its combination.

It is remarkable that a solution containing a small proportion of resorcin may be scarcely perceptibly darker in color than one which contains a much larger quantity of the organic body, and although in the first case, perhaps, the whole quantity of free iodine in the solution does not exceed 0.01 grain, yet this is not absorbed by the additional resorcin. But we are dealing here with a very exceptional set of conditions, and have a remarkable example of what Hlasiwetz strikingly describes as the middle ground between solution and chemical combination. There is, indeed, constantly apparent a struggle, so to speak, between the involved molecules; and this is influenced, not only by the relative quantity of the organic body present, but largely by that of the water. If, for example, a solution of iodine and resorcin be taken which colors starch distinctly, and gives up iodine to chloroform, and to this solution be added its own volume of water, the starch coloration is much less marked, and that of chloroform but faintly perceptible. If now another volume of water be added, the starch paste is not colored at all, and chloroform remains colorless. And I should here direct attention to the fact that in this case the coloration of added chloroform affords an infinitely more delicate indication of the presence of free iodine than does starch, and chloroform has the additional advantage that it can be added to the whole quantity of a solution under examination without spoiling it. To this it may be added that the eye alone is a quite sufficient indicator. If the solution is colorless, it may be safely assumed that no free iodine is present.

Hlasiwetz states that the quantity of hydriodic acid produced is insignifi-

cant. I have not found this to be true when operating under ordinary conditions, but it is just possible that at a low temperature it may be the case. I am at present engaged upon this important point.

I have been working, as will have been seen, from the point of view of the pharmacist. An iodine solution which shall not stain the skin has been a desideratum. Here it is, and it is what it claims to be; that is, that the greater part of its iodine is in so unstable combination that upon spontaneous evaporation it is left as free iodine; while, on the other hand, until the solvent has evaporated, the iodine remains upon the skin tissue easily assimilable.

Here, I think, the province of the pharmacist ends. It remains for the physician to say if the combined organic body exercises any prejudicial effect, or if, in a word, the decolorized solution will fulfil, without its inconveniences, the objects of the official tincture. But I do not hesitate to predict that it will, and I have, pending a verdict, thought it desirable to obtain for the solution protection under the Patent Act.

According to Andeer (NEW REMEDIES, September, 1880), resorcin is possessed of remarkably antiseptic properties, even in a one-per-cent solution. It is not absorbed by the healthy, unwounded skin, nor does it, when rubbed into it, produce any symptoms of irritation. It has even been used without any bad result as a hypodermic injection.—*Brit. and Colonial Druggist*.

EMULSION MIXER.

THOSE who have occasion, at this season of the year, to make emulsions of cod-liver oil will appreciate some mechanical contrivance which will replace the tedious mortar and pestle. To this class of apparatus belongs the "Cyclone" emulsion mixer made by the Hunter Sifter Manufacturing Co., of Cincinnati, illustrated in the adjoining figure. The mode of construction is sufficiently evident upon reference to the figure. The capacity of the bowl is about ten quarts, and the cost of the apparatus varies from five to seven dollars, depending upon the provision of a porcelain lining or not.

Phosphate of Bismuth.

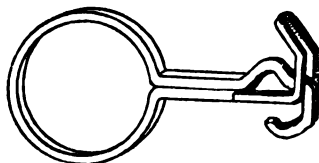
FREDENAT recommends phosphate of bismuth in place of the subnitrate, for the reason that the former salt is of more uniform and constant composition than the latter, and that it can also be more readily examined for impurities. It being almost insoluble in dilute acids, even on boiling, such adulterations as carbonate of calcium or magnesium, or phosphate of calcium, could be quickly detected by treating the salt with dilute acetic acid.

Phosphate of bismuth may be prepared by gradually adding to a boiling solution of acid nitrate of bismuth, a solution of (ortho) phosphate of potassium (or sodium), until a precipitate is no longer produced, and afterwards washing the precipitate until it no longer has an acid reaction. When dried, the salt appears in form of a granular, white, and heavy powder.—*Pharm. Zeit.*, No. 79.

[The latter reason—that it is more easily examined for purity—is not of sufficient weight to recommend the substitution. The first-named reason is much more important, but it remains to be seen whether the therapeutic effects will be the same. Theoretically, they are probably identical.]

Much of the bismuth of the market now dispensed is of the kind which imparts a very disgusting odor to the breath after three to six doses have been taken, while some can be taken for several days with

comparatively little annoyance from this source. We know of physicians who have had so much complaint on the part of patients that they have resorted to the practice of dispensing, themselves, the subnitrate of bismuth which their patients require, after providing themselves with a supply from some source which has been found to be comparatively free from bad effects.—*Ed. AMER. DRUGGIST*.]



AN IMPROVED PINCH-COCK.

N. v. KLOBUKOW recommends the form of pinch-cock shown in the annexed cut. It has the advantage of permitting the rapid disengagement of the tube which it holds without pulling the latter through it.—*Zeit. anal. Chem.*, 24, 399.



"Cyclone" Emulsion Mixer.

Iodol, a New Antiseptic.

ONE of the constituents of animal oil (the distillate obtained by subjecting animal substances containing protein bodies to destructive distillation) is pyrrol. When this is freed from other bodies as much as possible, and then precipitated by iodide of potassium, an iodine substitution product is obtained, namely tetra-iodo-pyrrol, which has been called for short *iodol*, by the discoverers, Drs. Silber and Ciamician, of Rome. It is now made on a large scale by Kalle & Co., of Biebrich on the Rhine. According to experiments made by Dr. Mazzoni, of Rome, iodol is a powerful antiseptic, having an anæsthetic action and greatly promoting the granulation of wounds. It has this advantage over iodoform, that it is free from the penetrating odor of the latter and does not produce any symptoms of intoxication.

Iodol is a brownish, crystalline powder which may be warmed to 100° C. without decomposition. At a higher temperature it evolves vapors of iodine and finally leaves a voluminous charcoal. It is almost insoluble in water, but easily soluble in ether, chloroform and alcohol, and especially so in absolute alcohol. Its alcoholic solution is precipitated by water, but not by glycerin. Sulphuric acid dissolves it with a green color, and when the alcoholic solution is warmed with nitric acid, it becomes bright red.

Iodol contains nearly 90 per cent of iodine. Iodoform contains nearly 97 per cent.—*After Pharm. Post*.

To Prevent Rust.—A coating of caoutchouc oil is said to have been adopted by the German army.—*Chemist and Druggist*.

Lait Virginal.

Tincture of Benzoin... 2 drachms.
Rose-Water..... 8 ounces.
Mucilage..... 1 drachm.

Add the mucilage to one ounce of the rose-water, then mix in the tincture, and lastly the rest of the water.—*Chemist and Druggist*.

Hair Wash (Erasmus Wilson).

Eau de Cologne..... 2 oz.
Tincture of Cantharides 2 dr.
Oil of Rosemary } each 10 drops.
" " Lavender }

—*Chemist and Druggist*.

Roup Pills.

Hydrarg. Subchlor..... gr. i.
Pulv. Antimonialis..... gr. i.
" Zingiberis..... gr. i.
Ext. Glycyrrhizæ, q. s. ut fiat pilula.

A pill night and morning.—*Chemist and Druggist*.

To Remove Moles or Birth-marks.

Tartar Emetic, in impalpable Powder..... 1 part.
Soap Plaster..... 4 parts.

Beat them to a paste which apply (not more than a line in thickness) and cover the whole with strips of gummed paper. It is said that in four or five days suppuration will set in, and that only a slight scar will finally be left in place of the birth-mark.—*Chemist and Druggist*.

Heger's Fluid.

R Carboic Acid (cryst.) 3 i.
Alcohol (strong) 3 iij.
Strong Water of Ammonia... 3 i.
Distilled Water..... 3 iij.
M.

The above was recommended by the late Dr. R. C. Brandeis to be inhaled in the proportion of a few drops, every hour, for the relief of catarrhal headache, and causes a profuse secretion of mucus followed by relief from the pain.

Parthenine in Malarial Fevers.

DR. TOVAR, of Cuba, has successfully treated eighty cases, such as ordinarily receive quinine, with parthenine, the substance in scales derived from *Parthenium hysterophorus*, a domestic remedy in Cuba for malarial fever. Parthenine is extracted in the form of dark-colored scales, which color water yellow, and impart to it an aromatic flavor.—*Chron. med.-quir. de la Habana*.

Mesquite Gum as Substitute for Gum Arabic.

In a thesis by H. J. Schuschar, of which an abstract is given in the *Amer. Journ. of Pharm.*, the writer says: "Gum mesquite does not appear to be much used at present, as the price of gum arabic is low. It is applicable to all purposes like gum Arabic, though the dark-colored varieties may be objectionable in some cases. In medicine, it does not only answer as well as gum Arabic, but it may be used with advantage, occasionally, since its solution can be combined with basic lead acetate and with ferric salts without being precipitated. No doubt, in time, gum mesquite will become a commercial article of some importance. It is generally assorted, according to its color, into four varieties or grades."

Powdering Aloes is not a pleasant occupation. The bitter dust is likely to trouble the operator, and the powder is apt to cake. The addition of about one drop of oil to every ten grammes of aloes will be found to remedy both these annoyances.—*Pharm. Post*.

NOTES ON PRACTICAL PHARMACY.*

[Continued from p. 204.]

PHOSPHORUS PILLS, PILULÆ CUM PHOSPHORO.

PILLS containing phosphorus are most perfectly made by dissolving the phosphorus in wax. The wax is put into test-tube, and liquefied by heat. When half cool, the phosphorus, dried on tissue paper, is put under the wax without touching the sides. A clean knitting needle is used to stir the mass, if this should prove necessary. The phosphorus is stirred with the needle while dissolving, and when the solution is accomplished, then the wax liquid is mixed up in a lukewarm mortar with the organic powders, etc., and the pills made only when this is quite cold.

	Gm.	gr.
R Phosphori.....	0.2	3½
Ol. Amygdalæ.....	10.0	150
Ol. Theobromæ.....	10.0	150
Flor. Malvæ pulv.....	q. s.	q. s.

Make 200 pills to be silvered.

	Gm.	gr.
R Phosphori.....	0.2	3½
Ceræ Flavæ.....	10.0	150
Ol. Amygdalæ.....	5.0	75
Ol. Theobromæ.....	5.0	75
Flor. Malvæ Pulv.....	15.0	225

Melt together the wax and oils; then add the phosphorus, and agitate until it is dissolved. Next add the powder, and make 200 pills.

PILL MASSES CONTAINING SALTS, ACIDS, AND OTHER SIMILAR DRUGS.

Nitrate of silver and salts of copper and of bismuth, and others which are decomposed by iron, should not be mixed in an iron mortar, but in one of heavy porcelain; the best constituent agent in these cases is althæa or tragacanth; they should be given the preference over gum arabic and sugar. The salts that are easily soluble in water, of course, require but little moist additions.

Pills with acetate of potassium (*kali-um acetatum*) do not keep, and deliquesce even when dispensed in glass vessels. The dispenser may be pardoned for substituting for this salt, in case of necessity, the *natrium acetatum siccum* (dry acetate of sodium), which is inferior to it in antiphlogistic action. It is better to acquaint the physician with the deliquescence of the pills of acetate of potash.

If the acetate of potassium is present to only one-fifth the weight in the mass, fairly durable pills may be obtained with a mixture of tragacanth powder, 3 parts, and the marsh-mallow powder, 1 part.

MUCILAGE OF TRAGACANTH is often added to the salts, but should not be employed as such; a suitable quantity of tragacanth powder should be mixed in the proportion of 1 part to 4 or 5 parts of the salt, and then water, or *aqua glycerinata*, added until the mass forms.

SUBLIMATE PILLS. Dry corrosive sublimate should be well triturated in a porcelain mortar after well mixing it with a small quantity of a powdery adjunct. If the vehicle is a mixture of white-bread crumb and sugar, they are not mixed immediately, so that they can be kneaded to a pill-mass by the addition of a distilled water; as there is a likelihood of having the mass too soft, and making the adjunct of a solid necessary. It were better to

moisten the sugar in the first case with one-third part of its weight of water, and then to knead the dry and powdered bread crumb with it; if the crumb is fresh, no addition of water is necessary. A substitution of althæa powder for the crumb (*mica panis*) is not permissible. Some dispensers replace the vehicle by a mixture of salep and water. Althæa powder has no other influence on the corrosive sublimate pills prepared with it than making them so hard that they are scarcely soluble in the stomach, and usually shrink after a few days to one-third their volume. This, however, is done away with to a great extent when equal parts of the powdered tragacanth and starch are taken and mixed with the *aqua glycerinata* (*glycerina diluta*) into a mass.

For the purpose of forming a pill mass:

1 part *mica panis pulverata* requires 1 part *aqua destillata* or *aqua glycerinata*.

6 parts of a mixture of equal parts of bread-crum and sugar require 1 part *aqua destillata*.

25 parts of sacch. pulveratum require 2 parts *aqua glycerinata*.

3 parts of *radix althææ pulverata* require 2 parts *aqua destillata*.

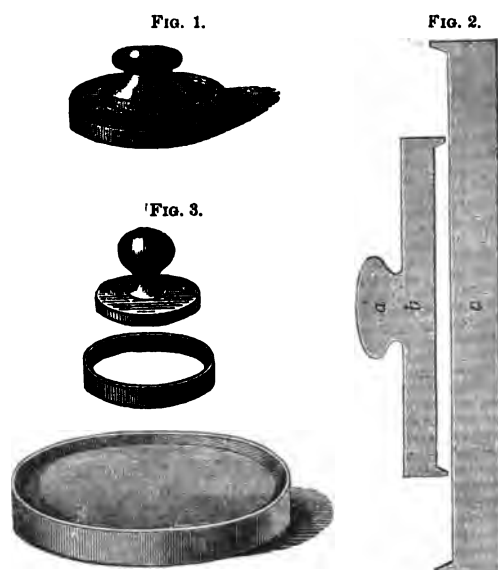


FIGURE 1.—Pill-rounder. FIGURE 2.—Section through Fig. 1, showing its construction. FIGURE 3.—Another form of pill-rounder, adapted for pills of different sizes.

1 part of *radix salep pulverata* requires 3 parts *aqua destillata*.

1 part of *tragacantha pulverata* requires 1 part *aqua destillata*.

If hydrous crystallized salts, liquid acids, and soft extracts enter into the composition of a pill mass with organic powders, the mixture frequently assumes a liquid or jelly-like consistency; but after the lapse of ten or fifteen minutes it will be of such a consistency as to permit the pills being made, or will make an excellent mass with the addition of a little althæa powder or *aqua glycerinata*. Nothing must be done to get the required consistency until the humidity is absorbed by the organic powders.

Blaud-Niemeyer's pills (*massa ferri carbonatis*, U. S. P.) are prepared from the *ferrum sulphuricum crystallisatum* and the *kali-um carbonicum siccum* (dry carbonate of potassium) in the following manner. In the first place, the iron salt is triturated to a fine powder in an iron mortar, the carbonate of potassium then added, and the trituration continued until a moist mass has been formed, which is then set aside for ten or fifteen minutes, when it is of the consistency of a thin jelly. To convert it into a plastic pill mass, it is mixed with almost three-tenths its weight of tragacanth powder and a few drops of *aqua glycerinata*, when it is again allowed to stand for ten minutes and then worked into a plastic pill mass. If it is too

hard or crumbly, a few drops of *aqua glycerinata* will suffice to change it into a good pill mass.

If bicarbonate of soda is prescribed with the crystallized sulphate of iron, both substances are well mixed and moistened with a few drops of water or *aqua glycerinata*. It is then put aside for half an hour and stirred up until the carbonic acid that has been liberated has passed off. The pill consistency is obtained with water or preferably with *aqua glycerinata* and powdered tragacanth, or althæa powder.

Pill masses containing acids must be mixed in porcelain mortars. Small additions of *aqua glycerinata* and of *radix althææ* suffice to produce good plastic pill masses.

	Gm.	gr.
R Pepsini sacch.....	2.5	38
Rhei pulv.....	5.0	45
Extr. Gentian.....	1.5	24
Althææ pulv.....	0.5	8
Aquæ glycerin.....	0.5	8
Ac. hydrochlor.....	gtt. 20	gtt. 20

Make 100 pills.

	Gm.	gr.
R Quinina sulph.....	5.0	75
Cinchonidina sulph.....	5.0	75
Tragacanthæ pulv.....	4.0	60
Gentianæ pulv.....	3.0	130
Glycerini.....	7.5	120
Althææ pulv.....	q. s.	q. s.
Ac. hydrochlor.....	5.0	75

Make 200 pills.

Pill masses containing alkaloid salts of cinchona are in as soft a state as jelly when freshly mixed, but form a hard pill mass after twenty or thirty minutes, and keep dry. As muriatic acid is volatile, the pills should be dispensed in glass bottles and not in boxes, as often is unfortunately done.

The pills, when dried, should be agitated in a small glass vessel with a few drops of the tincture of balsam of tolu, or better still, moistened with the gum mentioned below, and then dried in the air on a plate.

PILL-MASS with *Ferrum pulveratum* or *Ferrum hydrogenio reductum* often receive additions of substances which belong more or less to the class of acids, or which, like all officinal plant-extracts, contain acid constituents. In contact with iron, therefore, in the presence of

moisture, a slow evolution of hydrogen naturally takes place, because of the oxidation of the iron, and the pills swell to a varying extent. This oxidation cannot be prevented, and, on the contrary, it is promoted, and the ingredients mixed into a mass of the consistency of licorice paste and permitted to act upon each other, with occasional agitation, for several hours, at the temperature of digestion.

The following will serve as an example:

Pilulæ Aperientes Stahlîi.

R Aloes.....	15.0
Ext. Colocynth.....	7.5
Ferri pulv.....	4.0
Mucilag. G. Arab.....	q. s.
M. f. pil. No. 250.	

Here it is the extract of colocynth, which contains some substances akin to acids which, when in contact with iron, causes the pills to swell. In this case the mode of procedure is the same as described above.

The *Pilulæ Italica nigra* (*Pilulæ aloeticæ ferratæ*) require a hard and smooth surface. This is attained in perfection by means of the finisher. If kept for a long time, however, they sometimes crack, and become uneven and wrinkled. If, therefore, these pills are prepared to be kept in stock, the ingredients are blended into a paste, dried in a warm place, and then made into a pill-mass with spirits of wine. Pills thus prepared un-

*The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

dergo no change. These pills should be made weighing 0.1 Gm., of equal parts of dried sulphate of iron and aloes moistened with spirits of wine.

PILL-MASSSES containing **SALTS OF QUININE** (*Chininum hydrochloricum, sulfuricum*) frequently assume a crumbly consistency, so that it is almost impossible to roll them into pills; but with a slight addition of some acid and a few drops of glycerin, their consistency becomes pliable. As a rule, the same acids that already exist in the salts of quinine are added. For this purpose, to five parts of *Chininum sulfuricum* about one part *Acidum sulphuricum dilutum*, and to ten parts *Chininum hydrochloricum* one part *Acidum hydrochloricum* and one-half part of glycerin are required. When this addition is necessary, the mixture should be made in a porcelain mortar glazed on the inner surface.

PILLS which **ARE KEPT FOR A LONG TIME** and become **VERY HARD** are considered unreliable by physicians, because the patient often passes them unchanged in the feces. To pills of this kind an addition of *Aqua glycerinata* or *glycerin* is made. The latter addition, however, should always be restricted within narrow limits when the pill-mass contains strongly hygroscopic substances, since glycerin is a very hygroscopic body. Glycerin ceases to exhibit this quality as soon as it has taken up more than one-third of its bulk of moisture, or if it is mixed with organic non-hygroscopic powders, as, for instance, in the *Pilule ex Hydrargyro bichlorato corrosivo Phar. Milit. Borussiae*.

R Hydrarg. Chloridi corrosivi.... .0.6
Solve in

Aque dest..... .Gutt. nonnullis.
Adde

Opii pulv0.3
Rad. Glycyrrh. pulv.....5.0

Succi Glycyrrh.....8.0
M. exact. f. pil. 100 consp. sem. lycop.

R Hydrarg. Chloridi corrosivi.. .0.6
Aque Glycerinatæ..Gutt. nonnullas.

Exacte contritis adde
Opii pulv0.3

Rad. Glycyrrh. pulv6.0
Succi Glycyrrh.....4.0

Rad. Althææ.....1.0
Glycerini.....gtt. 10

Aque Glycerinatæ.....q.s.
Ut f. pilulæ No. 100.

R Ferri Chloridi.....5.0
Ext. Gentianæ.....2.5

Rad. Gent. pulv.,
Rad. Althææ.....ana q.s.

M. f. pilulæ 120 lycopodio consp. D. ad
vitrum. Take two pills three times a day.

R Ferri Chloridi.5.0
Rad. Gentian.....4.0

Rad. Althææ.....1.0
Contritis adde

Ext. Gentian2.5
Aque Glycerinatæ2.0

Contundendo fiat massa, ex qua pilulæ
formentur.

Although ferric chloride is hygroscopic, this property is nullified by the presence of the powdered gentian and marsh-mallow, nor is it re-established by the glycerin, which in the *Aqua glycerinata* is likewise saturated with water.

(To be continued.)

Syrup of Hydriodic Acid in Rheumatism.

DR. J. CRAIG (*N. Y. Med. Jour.*) has, during two years past, failed to see a case of acute rheumatism which was not benefited decidedly by the use of two or three teaspoonfuls of syrup of hydriodic acid in a wineglassful of water, every two hours. The dose may be diminished as the case improves, but should be continued for a week or ten days after acute symptoms have subsided.

Overcoat "Colds."

THIS is the season most appropriate for a little serious reflection on the subject of overcoats. Nothing seems more simple than to adapt clothing to the weather by the addition of an overcoat, light or heavy, as the occasion requires. It must not, however, be forgotten that just in proportion as the garment super-imposed upon the ordinary clothes is effective in producing a sense of warmth, it acts by arresting the evaporation of warm vapor from the body. This warm vapor continues to rise through the ordinary clothing, but it is prevented from escaping, and the clothes are saturated with it. The general effect is well enough while the overcoat is kept on, but the moment it is removed evaporation recommences, and the body is placed in a "cooler" constructed on the principle adopted when a damp cloth is wrapped around a butter dish, the vapor passing off, abstracting the heat, and leaving the contents of the cooler refrigerated.

The point to make clear is that the overcoat, let it be fashioned and ventilated as it may, does not prevent the underclothing from being saturated with moisture, but actually tends to make the moisture accumulate therein. This is proved by the sense of genial warmth felt while the overcoat is worn, and the evidences of perspiration easily perceived under the arms and at the sides of the chest particularly, immediately after the overcoat has been removed. Moreover, we take off the coat when we enter a warm house, and precisely at the moment when muscular activity is suspended. A very little consideration will suffice to convince the common sense thinker that nothing can well be worse managed than this process, both as regards its nature and the time and conditions of its operation. It is opposed to all the canons of health to allow the clothing to become saturated with perspiration, and then to take off the external covering and suffer rapid cooling by evaporation; while, if it were designed to do this at the worst possible time, probably none worse could be found than when muscular exercise has been discontinued.

The suggestion we have to offer is, that it would be far better policy to wear only one coat at a time, and to make whatever change may be necessary by removing a thin coat and replacing it by a thicker one when going out of doors, and the reverse when coming in. If, instead of wearing overcoats, people would wear coats of different thicknesses, according to the weather and conditions generally, they would avoid the danger of cooling by evaporation; the garments saturated with moisture would be removed, and dry off the body instead of on it. We believe no inconsiderable proportion of the "colds," attacks of lumbago, and even more formidable results of what are popularly called "chills," may be traced to the practice of wearing overcoats which arrest the ordinary process of evaporation, cause the clothing within to be saturated with accumulated perspiration, and are then removed, when rapid cooling takes place. The avoidance of this peril is to be attained by such change of coats as the condition requires.—*Lancet*.

Ichthyol.—A company has been established in Hamburg for the manufacture of various preparations of ichthyol. Its advantage consists largely in its containing 16% of sulphur and its complete solubility in water. Ichthyol wadding is reputed to be an efficacious application for burns, and ichthyol soap is recommended as an application for rough skin and as a cosmetic for actors.—*Edinb. Med. Jour.*

Jaborandi Alkaloids.

RECENT researches by E. Merck develop two alkaloids from jaborandi leaves, besides pilocarpine and jaborine. Harnack names them "pilocarpidine" and "jaboridine." On comparing the formula of pilocarpidine ($C_{11}H_{15}N_2O_2$) with that of pilocarpine ($C_{11}H_{15}N_2O_2$), it appears that the latter is a methyl derivative of the former. On further comparing the formula of pilocarpidine with that of nicotine ($C_{10}H_{14}N_2$), it will be seen that the former only differs from the latter by containing two atoms of oxygen. Harnack is therefore of opinion that pilocarpidine must be regarded as dihydroxyl nicotine, in which case pilocarpidine would be a direct link between nicotine and pilocarpine. Pilocarpine and pilocarpidine have most chemical reactions in common, but the aqueous solutions of pilocarpidine salts are not, like those of pilocarpine, precipitated by gold chloride. Pilocarpidine acts physiologically like pilocarpine, and jaboridine like jaborine. Free jaboridine is a syrupy substance; its nitrate crystallizes in columns resembling nitre. Jaborine and jaboridine, both of which are amorphous substances, do not pre-exist in the plant, but are formed by oxidation from pilocarpine and pilocarpidine. The formula of pilocarpidine is $C_{11}H_{15}N_2O_2$, that of jaboridine $C_{11}H_{15}N_2O_2$. Pilocarpine is converted into jaborine by the replacement of two atoms of hydrogen by one atom of oxygen.—*Pharmaceutische Zeitung*.

Algin.

AFTER the soluble portions of seaweed have been extracted with cold water, the weed is boiled with carbonate of soda, the solution filtered, and precipitated with sulphuric acid. This precipitate is a newly-recognized substance known as algin, and contains all the nutritious elements of seaweed. It is, in fact, a sort of vegetable albumen. It has fourteen times the viscosity of starch, and thirty-seven times that of gum Arabic. Algin or sodium alginate in solution is precipitated or coagulated by alcohol, acetone, and collodion, but not by ether. It is precipitated by mineral acids, various salts, and by lime-water and baryta-water. It is not precipitated or coagulated by alkalies or alkaline salts, starch, glycerol, or cane-sugar, nor by the ordinary alkaloids. It differs from albumen in not coagulating with heat, and from gelose by not gelatinizing on cooling; by containing nitrogen, by dissolving in weak alkaline solutions, and by its insolubility in boiling water. From gelatin it differs by its giving no reaction with tannin. Unlike starch, it gives no color with iodine, and its insolubility in dilute alcohol and dilute mineral acids renders it unlike gum Arabic, pectin, tragacanth, and dextrin. It precipitates salts of the alkaline earths, excepting magnesium, and also those of most metals, but it gives no precipitate with mercuric chloride or potassium silicate.

Among the industrial uses to which algin has been put are the sizing of fabrics; as a mordant in dyeing and printing; as an article of food, and in the manufacture of a peculiar paper. When dried and pressed, it can be turned and polished. It forms an excellent agent for preventing boiler incrustations when used in the form of sodium alginate, and in pharmacy it is said to be useful for emulsifying oils, making pill-masses, and for refining alcoholic liquors.—S. P. SADTLER in *Amer. Journ. of Phar.*

Antipyrin and Spirit of Nitrous Ether, according to Dr. Eccles, are incompatible.—*N. Y. Med. Journ.*

IMPROVED SPECIFIC GRAVITY BALANCES.

MOHR's specific gravity balance has been repeatedly slightly modified and improved, but the original principle of construction has generally been maintained.

In NEW REM. for 1877, we gave a description of an improved form of the balance, designed by Westphal. We procured one of these for our own use, and have found it to be exceedingly serviceable and trustworthy. As will be seen from the illustration, the specific gravity of a liquid is taken by immersing in it a float containing an accurate thermometer, and then restoring the equilibrium of the balance by attaching weights (riders), to the beam, each of which corresponds to one of the decimal spaces in a fraction having 4 decimals. At 15° C., therefore, the spec. grav. of a liquid lighter than water is found by merely reading off the figures of four notches in which the riders are placed. In the case of liquids heavier than water, an extra weight is suspended from the end of the beam, which corresponds to the number 1, intended to precede the decimals.

In our succeeding volume (NEW REM. 1878, page 322), we described another form of the same balance, designed by L. Reimann, of Berlin. In this, the float is likewise connected with a thermometer.

It has, however, been found by experience that these thermometer floats are sometimes inconvenient. It happens not infrequently that the thermometer breaks, and as the weights accompanying the apparatus are adjusted so as to exactly correspond to the particular float supplied at the same time, they would not usually be equivalent to a new float that might be ordered and supplied to distant customers, who cannot well send the whole apparatus back.

[We have so far been lucky enough to preserve the original apparatus unbroken. Yet we have been assured that exactly identical duplicate floats of Reimann's balance can be obtained at any time. —Ed. A. D.]

To do away with this drawback, C. Rumann (with F. Sartorius, of Göttingen) has separated the thermometer from the float itself.

In this way it has become more easy to make the floats of exactly uniform size and weight, so as to be readily interchangeable. The new form of balance is shown in the accompanying illustration (after *Chemiker Zeit.*).

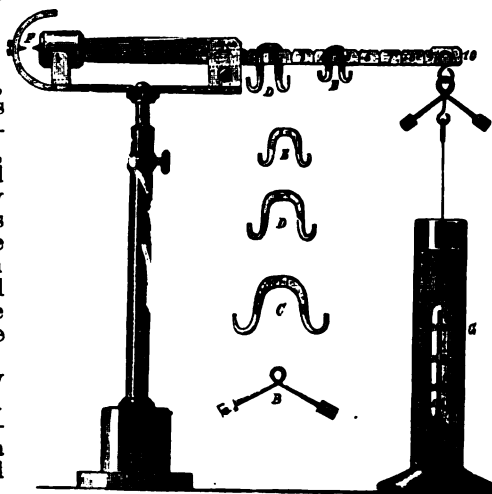
Removing Superfluous Hair.

F. F. G., of Phillipsburg, Pa., asks the *Druggist's Circular* for a mode of removing hair, and is given a formula taken from the *Independent Record* for a paste of calcium hydrosulphate which it recommends as the most reliable depilatory. 100 parts of good calcined lime are moistened with 50 parts of water, and, when slaked, diluted with 200 parts of cold water. The gas from the decomposition of 300 parts of sulphide of iron by 200 parts of sulphuric acid are conducted into the solution, contained in a suitable vessel and the product secured in tightly closed vessels, where it will keep but a few weeks, at most. This is known as *Böttger's paste*.

The Turkish paste called *Rusma* consists of slaked lime, 50 parts; starch, 30 parts, and orpiment, 5 parts, to be mixed with water. Either of these are to be applied in a thin layer to the

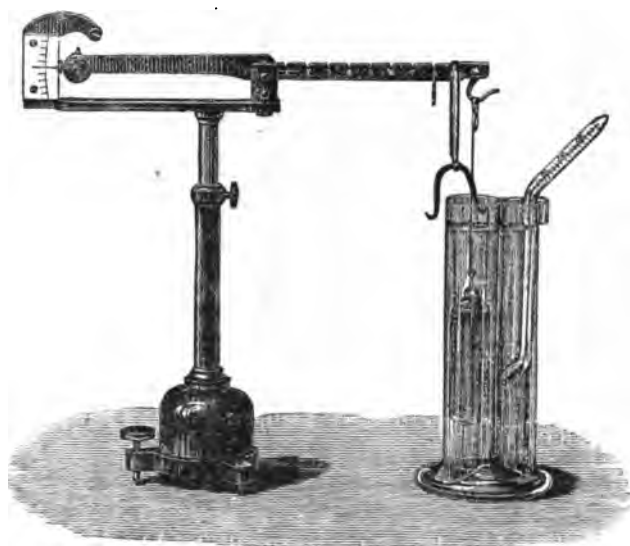
surface to be denuded, and after about ten minutes, washed off with water.

[Either of these is apt to cause inflammation and deep sores, and neither prevent the renewal of the hair, since they merely soften the hair, so as to permit it to be easily extracted from the hair follicles. A much better plan is the one suggested by Drs. Piffard and Fox, of New York, which has been successfully practised in a considerable number of cases. It consists in the destruction of the hair-follicles by means of a galvanic current. To accomplish this, a fine platinum needle,



Westphal's specific gravity balance.

fixed in a suitable handle, and connected with one of the poles of a battery, is inserted along the side of a hair into the follicle. The electrode connected with the other pole is placed on the surface of the body wherever convenient. The passage of the current is attended with destruction of the follicle as shown by the formation of bubbles of gas and loosening of the hair which comes away with slight effort. This operation is somewhat tedious, as it has to be repeated for



Rumann's specific gravity balance.

every hair, but it is certain, and not liable to be followed by bad scars. — EDITOR AMER. DRUGGIST.]

Cockroach Exterminator.

G. P. M., of Chicago, is answered by the *Druggist's Circular* with the following, taken from Killner's work:

"Wheat flour, 2 oz.; powdered sugar, 4 oz.; powdered borax, 1 oz.; unslaked lime, 1 oz. Mix thoroughly and keep dry. Place on paper in places infested. Repeat several nights."

[Powdered borax, alone, has for some time been used by sprinkling it freely in places frequented by roaches, but a correspondent of the *Chemist and Druggist*, some years since, said that he got the best results from using the borax in the form of a lump, by getting

the roach between the lump and the floor and applying strong pressure. Be that as it may, powdered borax will prove effectual if care is taken to exclude access to water, and it matters little what is used, if leaky sinks and faucets are allowed to drip so as to furnish a supply of water, without which roaches cannot exist. In a recent number we mentioned the experience of some one who had remarkable success with the rind of cucumbers, which was placed where they could reach it during the night. Taking advantage of the need that roaches have for water, it is sometimes customary to trap them by placing water in the bottom of a vessel with smooth sides, and arranging a stick for them to reach the top from the floor; once in they cannot get out.]

Solubility of Mercuric Iodide.

In view of the fact that certain chemicals, when dissolved in water or alcohol for subsequent incorporation in ointments, are not only liable to undesired reaction with water, but also in danger of crystallizing out on evaporation of the menstrua, Dr. C. Méhu, of Paris, pointed out that benzoate of iron, valerianate of zinc, and ferric cinnamate can be dissolved in fatty oils, and that thereby a more elegant and reliable compound will be obtained. In a paper read at the International Pharmaceutical Congress at Brussels he records observations concerning the solubility in fatty menstrua of biniodide of mercury. Oil of almonds will dissolve enough biniodide to satisfy most of the requirements of therapeutics. By triturating in a porcelain capsule on a steam-bath, 65 centigrammes can be perfectly dissolved in 50 grammes in about a quarter of an hour. This is about 13 parts in 1,000; but about two-thirds of this will be deposited on cooling. After numerous experiments,

Dr. Méhu concludes that about 4 parts in 1,000 is about the practical limit of solution of biniodide in oil of almonds which will keep without depositing in all ordinary temperatures. The addition of iodide of potassium renders the biniodide much more soluble. It is easy to dissolve 50 parts of the compound $HgI_2.KI$ in 1,000 parts of almond oil. Olive oil had much the same effect as a solvent as almond oil. Poppy-seed oil will keep 10 parts of biniodide in 1,000 without depositing. Nut oil will retain 13 parts in 1,000. Castor oil will dissolve 40 parts in 1,000 when hot, and will only deposit about half that quantity. This oil appears to meet every requirement. In 1,000 grammes of castor oil at the temperature of a steam-bath, it is easy to dissolve 80 grammes of biniodide and 48 grammes of bichloride of mercury, from which only a small proportion deposits. The compound $HgI_2.KI$ can be dissolved in five times its weight of castor oil at 100° C., and only deposits traces on cooling. Lard will only retain in solution (without crystallization) up to 4½ parts per 1,000. Vaseline will not dissolve more than 2 parts per 1,000 when hot, and deposits almost the whole on cooling. Carbolic acid at 100° C. will dissolve rather more than 20 parts in 1,000, and deposits rather more than half on cooling. Benzin will dissolve 20 parts in 1,000, but will not retain more than 4 parts on cooling. — *Chemist and Druggist*,

Oil of Man.

THE following is an abstract of what Moses Charraz says in his Royal Pharmacopœia (1678):—"Two or three skulls from healthy men (recently hanged or otherwise have met a violent death) are well cleaned and placed in a clay retort. Various precautions are taken to keep the contents of the retort from foreign contamination, and a gentle furnace heat is applied until 'volatile salt spirits, accompanied with oil, distil over.' The oil is to be rectified. 'The oil, as well as the salt, may be taken internally. . . . The dose of the oil is two to three drops to eight or ten in some liquors, etc. . . . You may also use it to anoint the temples or the entries of the skull, or put it up the nostrils. . . . Substances very much like to those which are extracted from the skull of man may be drawn out of all the bones, observing the same method in their distillation.'" *Oleum animale*, though from indifferent bones, would be a fair substitute for this product.—*Chemist and Druggist*.

Solution of Silicate of Sodium.

SOLUTION of silicate of sodium is officinal both in the U. S. and in the Germ. Pharm.

The Pharmacopœia Committee of the Germ. Pharm. Soc. proposes the following as tests or requirements of purity:

"1 C.c. of water-glass (*Liquor Natrii Silicici* or *Liquor Sodii Silicatis* U. S.), dissolved in 10 C.c. of water and acidulated with hydrochloric acid, should not effervesce, and should not be affected by solution of hydrosulphuric acid. On triturating together, in a capsule, equal parts of water-glass and alcohol [sp. gr. 0.830-0.884], an ample amount of a granular, but not a pulpy or smeary salt, should be separated; the filtered liquid should not impart a brown color to turmeric paper."

The following comments are added by the committee: In assaying water glass to be used for dressings, particular attention is to be paid to the presence of any free caustic alkali or its carbonate, as either of them would have a caustic effect upon the skin. Carbonate would be revealed by the effervescence when acids are added. Any caustic alkali would be found by the test with alcohol. Only the trisilicate and the tetrasilicate of sodium separate a granular silicate when the water-glass is triturated with an equal weight of alcohol. The bisilicate yields a smeary resinous salt, and the sesqui- and monosilicate a thin pulp. In the case of the tri- and tetrasilicate, the alcoholic filtrate has a neutral, in the case of the bisilicate a faintly alkaline, and in the sesquisilicate a distinctly alkaline reaction. Since red litmus paper has occasionally been found to be rendered slightly blue even by water-glass of known excellence, turmeric paper has been prescribed as test, as this was not affected under the same circumstances.

The test for metallic impurities with solution of hydrosulphuric acid is best made in the acidulated solution (1 in 10).

The officinal test of the Germ. Pharm. requires the absence of metallic impurities, but says nothing about any alkalinity or caustic effect.

The U. S. Pharm. says nothing about the absence of metallic impurities—since only iron is likely to be found in it in any considerable quantity—but requires it to be free from any caustic effect on the skin. This is rather indefinite, and the test is one which will be usually shunned or declined.

We think the recommendations of the Germ. Pharm. committee worthy of adoption in our Pharmacopœia,

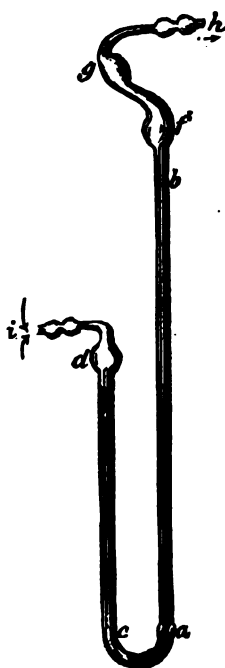
VACUUM REGULATOR FOR FILTER PUMPS.

IN using the filter or vacuum pumps described in our last number, it is generally difficult to regulate the rate of exhaustion so that it shall not exceed a certain limit. Supposing, we desire to filter a rather large quantity of liquid without pulling it, as it were, too quickly through the filter, and we, therefore, do not require the full pressure of the atmosphere (760 millimeters), but perhaps only half this pressure (380 millimeters), it is indeed possible, by careful adjustment and constant watching of the vacuum gauge, to maintain this pressure uniformly, but if the apparatus is left alone, or if the filter should become clogged, the exhaustion may become irregular, and perhaps exceed the desired limit. To remove this drawback, and to prevent the limit being exceeded, Nikolaus von Klobukow has devised an adjustable two-armed

FIG. 1.



FIG. 2.



Klobukow's Vacuum Regulator.

barometer, which is to be connected with the vessel to be exhausted, and by the position or inclination of which the rate of exhaustion is regulated. The short arm of this barometer is, of course, open to the outer air. The other end is connected with the vessel to be exhausted, which is next connected with the filter-pump, and the latter with the water-supply. The barometer is fastened upon a board which may be inclined by a central screw in any direction, and the rate of inclination may be read off from a graduated semicircle. When the filter-pump is started, the air contained in the vessel bearing the funnel is gradually rarefied or exhausted. But, as the vessel communicates with the long leg of the barometer, the rarefaction will cause the mercury contained in it to ascend the long tube until the latter is filled. Of course, it should have the proper height (over 30 inches) so that the mercury cannot be drawn over into the exhausted vessel. If the

barometer has been exactly perpendicular during the exhaustion, and the latter is pushed to an extreme, nothing further can happen but that all the mercury would be drawn into the longer leg. If, however, the barometer has been inclined, as for instance in Fig. 1, then the perpendicular height of the column of mercury is decreased, and it thereby no longer counterbalances the full pressure of the atmosphere. Supposing the barometer were placed entirely horizontally, then all the mercury would also be in the longer leg, but the outer air would have easy access all along its upper surface, where a channel would be formed to let it pass. If, therefore, the filter-pump produces at any time, while the two-armed barometer is in an inclined position, any greater exhaustion than the column of mercury in the barometer can counterbalance, a corresponding quantity of air will be sucked or aspirated through the column of mercury into the exhausted vessel, until the equilibrium has been established. By properly marking the degrees on the semicircle with the rate of pressure corresponding to each, the same degree of pressure or exhaustion may at any time be established or maintained, merely by inclining the barometer to this point.—*Zeitsch. f. anal. Chem.*, 1885, 400.

Pyridine in Asthma.

PROF. GERMAIN SÉE (*Bull. Thérap.*) attributes the usefulness of many of the reputed cures for asthma to the existence in them of an organic substance known as *pyridine*. This body (C_4H_5N) is found in the products of the dry distillation of organic matters, such as tar, the principal alkaloids, the smoke of tobacco and nicotine, together with a series of bodies lately studied by Oeschner in Dippel's oil [Pyridine does not exist in all of these substances in a free or readily separable state. In some of them, as, for instance, certain alkaloids, it is one of the constituents of the molecule, and is not individually responsible for any of the physical, chemical or therapeutic properties of the compound.—Ed. A. D.] from which it is ordinarily derived. It is a colorless, very volatile liquid, with a strong and penetrating odor, miscible with water in all proportions, and forms with mineral acids soluble but instable bases. Prof. Sée considers iodine to be *par excellence* the remedy for asthma, no matter from what cause it comes; but where iodism is produced, and another remedy is required to replace it, pyridine may be used as a palliative of the attacks, and is superior to hypodermic injections of morphine, its action being much more persistent and inoffensive.

The best mode of administration is by inhalation. The 4 to 5 grammes of pyridine being placed in the center of a room of about 25 cubic meters capacity, the patient occupies an angle of the room, and for twenty to thirty minutes breathes an atmosphere charged with the vapor. This may be repeated thrice daily.

Nitrite of Sodium in Gouty Epilepsy.

DR. J. MORTIMER GRANVILLE (*Brit. Med. Journ.*) recommends the following in epilepsy dependent upon a gouty taint:

℞ Sodii nitritis gr. xxxvi.
Sodii hippuratis ʒ iij.
Infusi serpentariae ad ʒ xij.

M. Two tablespoonfuls three times daily, before meals. The dose of nitrite of sodium may be increased by one grain after each fit which occurs subsequently to the commencement of the treatment. The mixture should be used regularly for three or four months; the dose of the sodium nitrite being increased, as above suggested, until it reaches 15 grains.

Resorcin in Gonorrhoea.

DR. A. J. MUNNICH advises the use of an urethral injection of a 3% solution of resorcin every two hours during the day, and at least twice during the night; the fluid being allowed to flow away immediately. During the treatment, which should be continued about a fortnight, the abundant use of milk or water is recommended in order to increase the flow of urine and wash the pus from the urethra. The frequency of injections may be reduced, after the fourth or fifth day, when the discharge is diminished, to three or four times daily, and once at night.

[Many cases of gonorrhoea would recover within two weeks with no injections whatever and the use of copious bland drinks; and it would doubtless answer quite as well to use, in the way above described, a solution of common salt or sulphate of soda of the same strength, to avoid the irritation which would be caused by pure water.—ED. AM. DRUGGIST.]

Improved Fehling's Solution.

FEHLING'S solution, as usually prepared, is a very unstable mixture, the cause of the trouble being the Rochelle salt or neutral tartrate of potassium, whichever it may be, that has been used in its preparation. For this reason it is preferred by many chemists to keep the solution in two separate portions, to be mixed in definite proportions when wanted.

Some time ago, it was proposed to remove this drawback by replacing a good deal of the water in the solution by glycerin. We have been informed that this plan was moderately successful.

Quite lately, Prof. Schmiedeberg proposed to replace the alkali tartrate by mannite. The formula is as follows:

Copper sulphat. cryst.	34.632 Gm.
Mannite.....	16. Gm.
Solut'n of soda, sp. gr. 1.145, 480.	C.c.
Distilled water	q. s.

Dissolve the sulphate of copper in about 200 C.c. of the water, add the mannite, previously dissolved in 100 C.c. of water, then add the soda solution, and finally make up to one liter with water.

If pure mannite is used, the resulting solution is much more stable than that made with Rochelle salt. Even should it deposit a small trace of oxide of copper (perhaps caused by slight impurities), after standing some time at the ordinary temperature of the room, the supernatant solution will not become clouded or decomposed by boiling, and may still be used for the quantitative estimation of glucose.—*Chem. Zeit.*

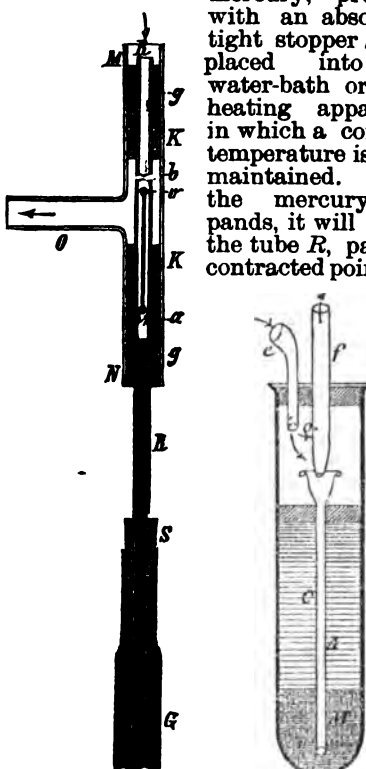
[NOTE OF ED. AM. DR.—Mannite is a saccharine substance, chemically speaking, a sexatomic alcohol, $C_6H_{12}O_6$ —which occurs in various plants, such as *Apium graveolens*, *Canella alba*, *Syringa vulgaris*, some sea-tangs, aconite root, in olives, and in *Agaricus integer* (which contains about 20% of mannite in the dry substance). Usually obtained from manna, an exudation of *Fraxinus Ornus*.

It is extracted from the latter by dissolving manna in half its weight of water, adding white of egg, raising to a boil, and filtering while boiling. The separated mannite is pressed, kneaded with cold water, again pressed, dissolved in six to seven parts of hot water, then treated with animal charcoal, and the filtered solution set aside to crystallize. It ought to be purified by recrystallization from alcohol. Before using it as a constituent of Fehling's solution, it should be tested with the solution, as ordinarily made, to insure the absence of any substance capable of reducing the copper.]

THERMOREGULATORS.

THAT perfection is far from being reached in the case of heat regulators is evidenced by the numerous forms of construction proposed. In the following we give a description of several which have been recommended.

1. *Kreusler's Thermoregulator* (*Chemiker Zeit.*, 1884, 1,321). A stout glass-tube *R* is contracted by careful heating at *a*, and afterwards cut off with a file some distance above this place (at *b*). Both pieces of the tubing are then passed through cork-rings, bored exactly centrally, so that, when the ends of the two tubes are pushed together to within $\frac{1}{4}$ Mm. (at *b*) the bore of the two tubes will be exactly continuous. A small float is now inserted into the bore. This is made by taking a thin glass rod and fusing small glass balls at each end. One of these, *v*, should be large enough to almost fill the bore, yet so that a very small quantity of gas may pass by. The other ball may be much smaller, and need only be large enough to be arrested at the contraction. The T-piece MNO is also made of glass. *G* is a reservoir for mercury, provided with an absolutely tight stopper *S*, and placed into the water-bath or other heating apparatus, in which a constant temperature is to be maintained. When the mercury expands, it will rise in the tube *R*, pass the contracted point, and



Kreusler's thermo-regulator.

Randolph's thermo-regulator.

raise the float until the ball *v* rises as far as *b*, when the main supply of gas will be shut off, and only enough will pass to keep up a small flame. The gas passes in the direction of the arrows.

2. *Randolph's Thermoregulator*.—A small quantity of mercury, *M*, is poured into a test tube, and some alcohol poured on top of it. A rubber-stopper, carrying a small funnel with long stem, is then pushed down on top of the alcohol. The mouth of the test-tube is closed by another rubber-stopper carrying two tubes; one, *c*, being connected with the gas-supply, while the other extends to within the cup of the little funnel, and has, besides, a small hole at *o*. When the heat expands the alcohol and mercury, the latter is pushed up into the funnel until it finally closes the orifice of the tube *f* (leading to the gas-burner), thereby cutting off the main supply of gas, and permits only enough of the latter to pass through the orifice *o* to keep a small flame burning so that the flame in the burner may blaze up again when the current of gas is restored.—*Journ. Frankl. Inst.*

[NOTE.—In this and all other similar arrangements, it is supposed that the diminished supply of gas passing through the small orifice *o* will deliver

just gas enough to the burner to keep a very small flame lit. When the burner is new and clean, and the adjustment of the whole apparatus is perfect, this will be generally the case. But very often it will happen either that the flame in the burner, on being reduced very low, will strike back and kindle the gas inside of the tube, thereby producing heat and a sooty flame; or, the flame will go out altogether. If an apparatus of this kind begins to play pranks and cannot be trusted safely for any length of time, without being watched, it is better to provide a separate small burner, such, for instance, as is used in cigar stores for lighting cigars, which is fed with gas independently of the main burner, and the flame of which is so situated that it may at any moment rekindle the gas issuing from the burner.—ED. AMER. DRUGGIST.]

Local Application for Gout.

DR. ROTHE recommends for gouty joints the repeated use of cold douches, followed by applications of the following lotion:

Liquor. plumbi acetatis..parts, 15	
Spiritus vini..... " 25	
Tr. opii ammoniat..... " 5	
Aque fortis..... " 300	

Apply with compresses, and cover with rubber tissue. Great relief from pain is said to follow.—*Memorabilien*.

Quillaia Bark as an Expectorant.

DR. KOBERT recommends, as an expectorant, a decoction made with 5 grammes of soap-bark and 200 grammes of water, of which adults or children may take a dessertspoonful or a teaspoonful, respectively.

The glucosides which give to senega its expectorant properties are said to exist in much greater degree in quillaia bark, and the use of the latter is said to be preferable, as it causes neither diarrhoea nor vomiting, and is more agreeable in flavor. The decoction is sweetish, and is readily taken by children.—*Centralbl. f. Klin. Med.*

Uses of Sulphuric Acid.

SOME of M. Pasteur's latest experiments have proved that water containing 2 per cent of concentrated sulphuric acid possesses the property of destroying bacteria, and this mixture of acid and water is recommended for disinfecting efficaciously the floors of stables, mangers, cattle-stalls, court-yards, areas of dwellings, dust-bins, etc. Sulphuric acid, properly diluted, is a valuable cooling and astringent remedy. It is used to acidify certain decoctions or infusions. Only the dilute acid (in most countries, one part pure acid, nine parts water) is ever used medicinally. Ten to twenty-four drops of this dilute pharmaceutical acid will give an agreeable acidity to one quart of the infusion or other liquid. As many fever patients are fed principally on milk, care must be taken never to give liquids containing sulphuric acid, or acid lemonades of any kind too soon after milk has been given, otherwise it may produce unpleasant symptoms of indigestion. In France, an alcoholized sulphuric acid is sometimes used. It is made by adding concentrated sulphuric acid, 100 parts, to alcohol (of 85 per cent), 300 parts, and is generally colored red by the addition of 4 parts of the petals of the red poppy. Sulphuric lemonade is made from this according to the formula:

	Parts.
Alcoholized Sulphuric Acid....	3
Simple Syrup.....	60
Water.....	1,000

This is also known as "mineral lemonade."—*Chemist and Druggist*.

The Assay of Potent Drugs and of their Preparations.

DR. OTTO SCHWEISSINGER, of Heidelberg, has recently contributed several interesting papers on the subject of assaying powerful crude drugs and their preparations, to the *Pharm. Zeitung*, No. 64, and the *Archiv der Pharmacie* (3), vol. xxiii., 609, from which we take the essential portions.

1. Assay of Extracts of *Hyoscyamus* and *Belladonna*.

The author uses the following method:

1 to 2 Gm. of the extract was warmed for about one hour with 20 Gm. of diluted (1 to 20) sulphuric acid, on a water-bath, then allowed to cool, filtered, the residue washed first with a little diluted sulphuric acid, then with water, the filtrate rendered alkaline by ammonia, and shaken with 2 or 3 successive portions of about 15 Gm. of chloroform. Two such agitations were generally found sufficient. This process does not differ much from that previously recommended by others, or that lately given by Dr. Squibb in the *Ephemeris*, but the author accompanies it by a few useful practical hints and data. He recommends that the chloroform should be allowed, each time, to remain in contact with the liquid for a few hours. When the chloroform is removed, it often happens that a few drops of the aqueous liquid containing the sulphate of ammonium are carried over with it. In order, therefore, to obtain the alkaloid in a pure state on evaporation, it is necessary to redissolve the residue with chloroform. It is not recommended to filter the chloroform solution.

He also quotes data which show that two agitations with chloroform are usually enough, at least in the case of atropine.

[Note.—If the operator is careful and has some experience, it is not usual that any of the aqueous liquid is accidentally withdrawn together with the chloroformic solution. It is best to perform the operation in a separator having a fine exit tube with a well-ground stop-cock. When the two layers have separated, and the dividing line can be sharply recognized, the chloroformic layer is allowed to run out until the dividing line nearly reaches the stop-cock. The second and subsequent shakings are then drawn off in the same manner. Finally, by means of a funnel having a fine orifice bent upwards, a small quantity of pure chloroform is allowed to flow gently on the surface of the still remaining chloroformic liquid, and the latter then drawn off as far as possible without allowing the aqueous liquid to come through. Instead of thus pouring fresh chloroform in, a little disulphide of carbon will sometimes answer. In most cases it is not necessary to add anything, but sometimes it is difficult to distinguish the exact line of demarcation, and in such cases the above will be found a useful hint. In a general way, it may be stated that the separation of the aqueous liquid and chloroformic (or other volatile) menstruum will take place more rapidly and sharply, the greater the difference between their specific gravities is, and the less excess of alkali has been added. This often produces a sort of soap which separates with great difficulty.—ED. AM. DRUGG.]

In a German extract of belladonna, about one year old, the author found 1.1 per cent of atropine. In two other samples, recently prepared according to the Germ. Pharm., he found 1.4 and 1.45 per cent respectively.

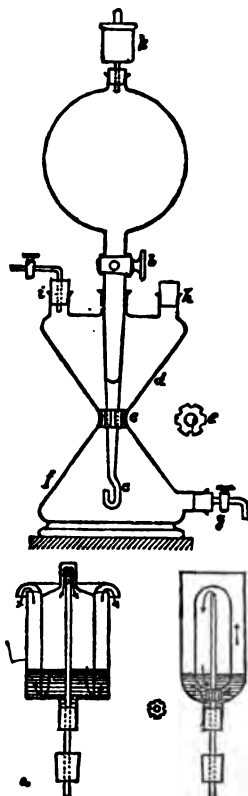
2. *Extract of Opium*.—The Germ. Pharm. gives a process of assay for this preparation, and requires it to contain at least 11 per cent, which is altogether too low, considering that the German official opium must con-

tain at least 10 per cent of morphine, and that opium yields between 50 and 60 per cent of extract. As Hager recommended, the preparation should be adjusted to a uniform strength of 20 per cent of morphine.—After *Pharm. Zeit.*

[Note.—Something like this should also be provided for in the U. S. Ph., where extractum opii is not defined in strength. Official opium is required to contain not less than 9 per cent of morphine, and, when dried, should yield between 55 and 60 per cent of dry aqueous extract (U. S.). It will, therefore, be easy to provide a formula for an extract of opium containing 20 per cent of morphine.]

3. *Assay of Strychnine and Brucine*.—The author has investigated Dunstan's and Short's method of separating strychnine and brucine by means of ferro-cyanide of potassium, and comes to the conclusion that it is not reliable.

For the determination of *strychnine*, when present alone (without brucine) in a solution, the author found that



Reinhardt's sulphuretted hydrogen apparatus.

tolerably uniform results may be obtained with one-tenth normal solution of iodine. No reliable results, however, could be obtained with this in the case of brucine or a mixture of strychnine and brucine.

Either alkaloid, or both together, when present in a solution (without other alkaloids), may be determined by means of volumetric solution of iodohydrargyrate of potassium, according to Dragendorff, or by weighing them as hydrochlorides.

Very close results may also be obtained, according to the author, by determining the quantity of either alkaloid with $\frac{1}{10}$ normal hydrochloric acid (containing 0.365 Gm. of absolute hydrochloric acid in 1 liter. That is, 1 C.c. of normal volumetric solution of soda would require for complete neutralization 100 C.c. of the acid.)

0.01287 Gm. of strychnine corresponds to 0.001415 Gm. of hydrochloric acid, or 3.87 C.c. of the $\frac{1}{10}$ volumetric solution.

0.0131 Gm. of anhydrous brucine corresponds to 0.001214 Gm. of HCl, or to 3.60 C.c. of the $\frac{1}{10}$ volumetric acid.

The applicability of this method to mixtures of strychnine and brucine requires to be assured by further experiments.—After *Arch. d. Pharm.*

IMPROVED SULPHURETTED HYDROGEN APPARATUS.

ON page 145 of our volume for 1884, we described an apparatus for generating sulphuretted hydrogen, devised by C. Reinhardt, which had many advantages over other forms. Experience, however, has shown that it could be still further improved and simplified, so as to take up less room and be less liable to breakage. In its new form, the apparatus is constructed as shown in the cut.

Fig. 1 shows a globe-funnel *a*, having a faucet *b*, and a bent exit tube *c*. The end is turned up for the purpose of not disturbing the dense solution of ferrous chloride when new liquid is allowed to flow down the funnel. The receptacle *d* is charged with ferrous sulphate through the neck *b*, which is afterward closed with a rubber-stopper. The generated gas escapes through the delivery tube fixed in the other neck (*e*). The upper half of the generator *d* communicates directly with the lower half *f*, which contains the acid liquid, and the dense iron solution, the stopper *e*, through which the neck of the funnel passes, being notched, as shown in the little cut by the side of Fig. 1. The faucet *g* serves for drawing off the dense iron solution when necessary. Whenever the stream of gas is shut off by closing the stop-cock in the delivery tube *i*, the accumulating pressure of gas in *d* will drive the upper layers of the acid liquid in *f* back into the globular funnel. In order to permit the air contained in the latter to escape without contaminating the atmosphere of the room, the neck of the globe-funnel is closed with a stopper carrying a vessel charged with solution of potassa constructed as shown either in Fig. 2 or Fig. 3, the direction of the current of air being indicated by the arrows. Fig. 2, according to the author, is constructed of tinned iron and rubber stoppers; Fig. 3 consists of glass and rubber. The principle by which either of them works is easily intelligible, and the construction may be varied in many ways.—*Dingl. Polyt. Journ.*, 257, 73.

Mixture of Bromides.

It is by many appreciated that a mixture of several bromine salts is less likely to cause bromism, acne, and other inconveniences, when considerable doses of a bromide have to be long continued in the treatment of epilepsy. Erlenmeyer recommended the use of 5 grammes each of the bromide of ammonium, potassium, and sodium, in 250 grammes of water; but a recent writer in the *Canadian Practitioner* has found the following to be far superior to this combination:

Bromide of Ammonium... 1.80 grammes.
Bromide of Sodium,
Bromide of Potassium, aa 3.90 "
Distilled Water.....120.00 "

To be taken in teaspoonfuls during twenty-four hours.

Hippurate of Sodium.

GARROD demonstrated the effect of hippurate of sodium in decomposing uric acid, and Dr. Bon (*Journ. de Méd. de Paris*) advocates its employment in affections characterized by an excess of that acid. His formulæ are as follows:—

Hippurate of Sodium... 80 grains.
Carbonate of Lithium... 24 "
Glycerin..... $\frac{1}{2}$ oz.
Cinnamon Water 8 "

A tablespoonful four times daily.

Hippurate of Sodium... 100 grains.
Chlorate of Potassium... 22 "
Simple Syrup..... 6 drachms.
Peppermint Water.... 6 oz.

A tablespoonful four to six times daily.—After *Chem. and Drugg.*

CORRESPONDENCE.

The Status of Hospital Stewards in the Army.

Editor American Druggist:

SIR:—Permit me respectfully to remark that your correspondent, "Army," in the August number of your excellent journal, while deservedly chastising "Hospital Steward," U. S. A., errs himself, and purposely under-rates the quantity as well as the quality of the hospital steward's work.

Under a great majority of the medical officers of the Army, the steward does nearly everything except prescribe for the sick, perform surgical operations, and look after the hygiene of the command. Yea; he does a good deal of minor prescribing too. He is *de facto* and *de jure* the sole and only apothecary for so many officers, soldiers, and civilians, and their families; and this fact alone should entitle him to the sympathy and co-operation of the pharmaceutical profession. How much more is he entitled to the sympathy and aid of the medical corps of the Army, whose work he performs.

He makes out all the reports and returns, and keeps all the records, receiving only very brief directions from the surgeon in their preparation. In this are included the Consolidated Report of the Medical Department at the end of each month—a document of no small difficulty—a register and prescription book, a case and diet book, letters and a letter book, an order book, an indorsement book, a file of letters received, and index book, a medical history of the post book, a morning report to the commanding officer, a hospital fund book, and three monthly reports thereof, monthly reports of medical officers, hospital stewards, and hospital matrons, muster and pay-rolls of hospital and general non-commissioned staff officers at the post, made every two months, a descriptive book of the general non-commissioned staff officers at the post, and a clothing account book of the same. Every three months he makes out returns of clothing and camp and garrison equipage, and a return of quartermaster's stores. Once a year, or oftener if there be many changes of post-surgeons, he makes the return of medical property in triplicate—a good week's work. A return of durable property, a requisition for medical supplies, instruments, stores, furniture, etc., for the ensuing year. A return of hospital records, plans and estimates for the construction of a new hospital, or repairs and alterations to the old one. And other reports and returns to meet special cases.

Nearly all these papers are made in duplicate, some in triplicate, besides being copied into the record books. I respectfully assure "Army" that the clerical work alone of a steward amounts to at least five hours daily. He is druggist, clerk, storekeeper, head nurse, first sergeant, and general assistant to the post-surgeon.

Then, the assertion of "Army" notwithstanding, he is under nearly all medical officers in sole and absolute charge of the hospital property. True the surgeon is directly responsible, and no losses can be charged against the pay of the steward, except after trial and conviction of gross carelessness or dishonesty, for which he can and probably will be sent to a military penitentiary; but while the responsible medical officer may be compelled to make good the loss, his responsible steward is a ruined man in character, and spends a tenth part of his life in durance. This looks like a very practical division of property responsibility, with the actual work on the shoulders of the steward!

All day, and perhaps all night, the steward watches the sick, and not only

carries out the surgeon's orders, but supplements them here and there from his own resources of knowledge and experience. On his faithful observation often depends the weal or woe of human beings. He relieves the surgeon of the trouble of giving hypodermic injections and using the clinical thermometer, pulls teeth, does all minor surgery, and assists at the major. He watches and instructs the cooks and nurses, repairs the instruments, and sees that everything is ready for immediate use in case of emergency; he is held responsible by the surgeon that the supplies are kept up by timely requisition; he assists at autopsies and does the nastiest part of the work, in order to spare the feelings and sensibilities of the nurses who are not, like himself, used to the disgusting details, and he is held responsible by the surgeon for the discipline and cleanliness of every part of the hospital.

Woe to the steward if anything happen by day or by night, and he be not promptly on hand with everything ready. His cares are endless. He is always on duty. Yet according to "Army" he has little work and less responsibility.

All this for \$30 per month. True, as "Army" darkly hints, at some posts he has other sources of revenue, but that depends on the humanity and sense of justice of the post surgeon, and it is a fact that if he be a married man, the steward's wife *must* needs become a washerwoman, or he cannot support his family.

The assertions of "Army" notwithstanding, the steward's social status is *not* what it would be in civil life for the quality of work performed by him. As an enlisted man, he has no social status. His bearing and acquirements may make him friends in respectable civil society, but let those friends visit him and observe his position and the treatment accorded him as an enlisted man, and they will pityingly and gently give him the cold shoulder. The intelligent steward does not aspire to social intercourse with officers and their families, but he does aspire to a social status of a higher grade than that of every common soldier—impossible to him so long as he remains an enlisted man.

The Government, or its officers, demand of us services which require skill, intelligence, special training, some degree of scientific knowledge, integrity, and habits of care and sobriety, yet few of those officers are in favor of giving us a status corresponding with the nature of our duties, and I am forced to conclude that their reasons are selfish, under the belief that we are best under control as we now are. This is wrong, and this wrong, more than the scantiness of our wages, makes us dissatisfied with our position. Why, then, do we not leave this ignominious position? I and others like me have been over a quarter of a century in the service; have served the country honestly and zealously throughout a great crisis. Shall we now, in the post-meridian of our lives, enter the service of a new master, upon whose charity and gratitude we have no claim? In 1862 my pay was \$35 per month; now, after over twenty years more of honorable service, I receive \$33 per month because I was out of the service for a time. Yet were I appointed a second lieutenant to-morrow, my past service, for which as an enlisted man I now receive nothing, would give me over \$30 per month more than another second lieutenant would receive. Is this just? No, it is not, except on the basis that "to those who have shall be given, and from those that have not shall be taken away."

Give us, we beseech you, law-makers and officers of this enlightened Government, a military and consequent social status in harmony with

the work we perform and the services we are expected to render. If the hospital steward must be a man of brains and skill, *sans peur et sans reproche*, do not relegate him to the social regions of a coal-heaver, and compel his wife to spend her days in the physical and social atmosphere of the washtub. Give him both position and pay that in his yellowing years he may cease reproaching himself for having devoted his life to this profession, and that he may not exhaust the powers needed in the performance of his manifold duties, in devising ways and means to procure that which is justly due him. Certainly there are stewards now in the service whose mental status and accomplishments do not entitle them to aspire to anything higher than that which they now have, but these are gradually being weeded out, and the ranks of the hospital stewards of the army are being filled with the very best material furnished by the recruiting officer, and year by year more is expected of him by the medical officers and the Government.

Give these the rank and status of *warrant officers*, neither enlisted or commissioned. Then they may feel some pride in their calling, which it would require an elastic imagination to say that they do now.

ANOTHER HOSPITAL STEWARD.

Editor American Druggist:

DEAR SIR:—In answer to "A Subscriber" who ventilated himself in your October number, permit me to say that the average graduate of pharmacy would make but a very indifferent hospital steward, as the knowledge of pharmacy alone would be of very little assistance in helping a steward through the varied duties comprising a day's work.

No doubt "it has been some years since 'A Subscriber' has been connected with the army," and his "general observations" count for very little.

Paragraphs 6, 7, and 8 of his letter are conclusive proof that "A Subscriber" knows nothing about the subject which he undertakes to handle.

Merit and ability are the essentials for holding the position of hospital steward U. S. Army; those not meritorious and capable are quickly weeded out.

"A Subscriber" might obtain a few valuable points from the Surgeon-General's Office before venturing to discuss this subject again. H. H.

Editor American Druggist.

DEAR SIR:—In the October issue of your Journal, you allow a large space to correspondence from Hospital Stewards in the Army.

Your valuable aid, in common with other of the medical journals, has already been enlisted in our behalf.

To sum up: the efforts of years, and constant but not *concentrated* exertion to better the condition of army apothecaries has at least resulted in one thing, viz.: to plainly show that the service, as a whole, is injured by this "well-founded discontent." The administration of the Surgeon-General's office, the prevailing opinion in the army and among professional men in civil life is strongly in favor of a better condition of things for this class of medical subordinates, for the medical fraternity knows full well the responsibility army surgeons are compelled to throw on their stewards.

It is a waste of time to compare our services with any other branch. *Facts* are as plain as "Holy Writ;" let the truth alone prevail.

The first letter in your October issue in the main is an excellent one. It shows a gentlemanly intention to state matters as they *actually* are. The second, while remarkably well-written,

shows considerable egotism, and might be properly signed "Pharisee, We Thank God, etc." Now let me tell this pharmacist (?) that pharmaceutical ability alone will be far from making a successful steward. But if an advance in pay and a slight increase in rank were given army stewards, *competent druggists* from civil life would seek the situation, and after serving a while as second-class stewards, could be appointed to the position. There will be plenty of vacancies in the next four years; a great many of the older stewards will soon be eligible for the retired list; and with increased compensation will come increased abilities. As for the third letter in your October issue, signed "Caduceus," let him retire to a cave and pull it over him. If, in the face of the surgeon-general's recommendation and prevailing opinion, he is satisfied with \$34 monthly, and to have his wife rub out her knuckles on a wash-board while he pursues the profession of a pharmacist (?), why, all right; but let us make a separate class for him alone. All honest work is honorable, but "comparisons," as he makes them, are very "odious." I think myself it is rather hard for a class of men supposed to possess the qualifications of army stewards, compelled to have their wives do washing in order to eke out a living. Let a bill be framed and energetically pushed advancing the position of army stewards to the grade and pay of a warrant officer in the navy, all under such rules as the surgeon-general may see fit to make. This will give no special advancement, but will give increased pay and a better general status, make examinations more stringent (practical ones, however, and not simply crams), and you will soon have a body of ambitious and efficient men, and you will no longer have your columns filled with just complaints. For the steward of the present, who all in one is sub-doctor, sub-dentist, sub-nurse, sub-cook, sub-clerk, in fact, sub-servant, and shall I add, sub-washerwoman, will be relegated to the past to keep company with a good many other "customs of the service," now happily no longer in vogue.

"BETTER DAY."

Editor American Druggist.

SIR:—If you will allow me the space in your valuable journal, I will reply to some of the hypercritical remarks of "A Subscriber" in your October number. He starts out with the assertion that he "has been subjected to the examination required of army apothecaries," and "is thoroughly acquainted with army life." Granted; yet we think it has been some time since he severed his connection with the army, and while there have been well-directed efforts to increase the efficiency of the corps, he has remained *in statu quo*.

He is at least more than a year behind the times, for if he will refer to G. O. No. 98, A. G. O., Aug. 20th, 1884, he will find that the hospital steward's corps has been reduced in numbers from 150, as stated by him, to 140. We think he is still farther behind the times regarding the qualifications necessary to become a hospital steward, as he flippantly speaks of the appointment, saying: "Were all aspirants to this position made to pass the specified examination in materia medica, minor surgery, chemistry, prescription compounding" (by which we suppose he means pharmacy), "general aptitude for managing and conducting hospitals, English grammar, rhetoric, history, etc., as laid down by law, the hospital steward's corps would compose a fair class of druggists. But such examinations are in nearly every instance a mere matter of form, a farce."

Whoever heard of an examination in rhetoric and history to test a man's

qualification as a pharmacist? His assertion regarding the examination being a mere form is without foundation, and reflects upon the surgeons of the U. S. A., who are in every instance the examiners.

Army regulations, par. 280, are sufficiently explicit regarding the qualifications of the men who are recommended for appointment. We have heard it asserted that some years ago it was much easier for a man to obtain the position than at the present time; that the examinations were not so rigid as now. We presume that was when "A Subscriber" belonged to the corps. As may be supposed, the writer of this article is a hospital steward, and is not a Ph.G., and if you will excuse his bringing his own case forward, will use it as an illustration of what is necessary to qualify for the position of a hospital steward. Enlisted in 1881; profession, school-teacher; commenced the study of pharmacy, and took practical lessons in dispensary work during leisure time in December, 1882. Was ordered to a large hospital as an assistant to the hospital steward in June, 1883. Prosecuted the study of materia medica, chemistry, minor surgery, and bandaging under the tuition of an assistant surgeon, U. S. A., having regular recitations three times per week, and practical pharmacy, together with instruction as to hospital papers under tuition of the hospital steward until January, 1884, when I presented myself for examination.

The examination was conducted by a major and surgeon U. S. A., consisting of the foregoing, and English grammar, but excluding history and rhetoric; it was partly oral and partly written, and the papers containing the written questions and answers were forwarded through the medical director of the department to the Surgeon-General, U. S. A. This is the rule followed out in every instance that I know of personally.

We know of two young men who left positions as registered pharmacists, enlisted in the army for the purpose of becoming hospital stewards. One attempted to pass the required examination, and was recommended to put in six months' study by the examiner; he did so, and at the end of that time passed a satisfactory examination, and was recommended for the position to which he was afterward appointed. He has since studied medicine, and is now attending lectures. The other has passed the examination, but must await his turn for appointment, in the mean time doing duty as a soldier.

We have been approached by more than one young man who was a competent druggist, asking what steps were necessary to secure the position, but as the law at present stands a man must enlist as a general-service recruit and be put to duty as a private soldier, making his application for examination. If found competent, his name is placed on file in the office of the Surgeon-General for consideration, when his turn is reached. Here let me add parenthetically, that your correspondent waited from January, 1884, until July, 1885, for his appointment, but in the mean time doing all the duties of an hospital steward for the sum of \$22.00 per month.

We think this shows conclusively that it is not such an easy matter for even a *competent* man to become a steward, and under the present administration of affairs, an *incompetent* one has no chance at all.

We receive the lowest of any of the N. C. staff, while our duties are more arduous. Rank is a secondary consideration with the most of us; what we ask is pay commensurate with our work. If we do not get this, and see opportunities of bettering our condition in civil life, we one by one step down and out, leaving a vacancy for

some one else; and the only reason there are so many changes in the corps is because the stewards do not receive as much remuneration, counting their allowances, as they can make in civil life for the same work.

F. C.

Wyoming Pharmacy Law.

Ed. Am. Druggist:

I inclose a copy of the Wyoming statute regarding pharmacists. I have noticed several lists of States and territories published having such laws, omitting Wyoming, thus conveying the impression that we have no law, and thus inadvertently inviting incompetents to locate with us.

Respectfully,

J. H. FINFROCK.

LARAMIE CITY, Wyo., Oct. 25th, 1885.

CHAPTER 77.—PHARMACISTS.

AN ACT Concerning Pharmacists and Regulating the sale of Poisons, Repealing "An Act Regulating sale of poisons in the Territory Wyoming."

Be it enacted by the Council and House of Representatives of the Territory of Wyoming:

SECTION 1. That it shall be the duty of all practicing pharmacists, druggists, or apothecaries now resident, or who may after the passage of this act become residents of this Territory, to deposit with the Recorder of Deeds within the county wherein the said pharmacist, druggist, or apothecary resides and practises his profession his diploma or a certified copy of it for record.

SEC. 2. It shall not be lawful, after the passage of this act, for any person other than a registered pharmacist to retail compound, or dispense medicine and poisons, or to open or conduct any pharmacy or store for that purpose unless such person shall be, or shall employ and place in charge of said pharmacy or store a registered pharmacist within the meaning of this act.

SEC. 3. Any person in order to be a registered pharmacist, druggist, or apothecary, shall be a graduate of some *bona fide* school of pharmacy, regularly chartered by the State in which it is located or shall at the passage of this act have had three years' practical experience in drug stores where the prescriptions of medical practitioners are compounded.

SEC. 4. Pharmacists claiming the right of registration under this act, on account of practical experience, shall within ninety days after its passage show to the satisfaction of the Register of Deeds that they have had three years' practical experience in the preparation of prescriptions and in compounding and vending medicines and poisons, *provided* that nothing in this act shall apply to any person or persons in business on their own account upon the passage of this act.

SEC. 5. All druggists shall be held responsible for the quality of such drugs, medicines, and chemicals as they may sell or dispense, except such as are sold in the original packages of the manufacturers, and patent medicines, and any adulteration of the same shall be considered a misdemeanor, the penalty of which shall be a fine of not less than fifty dollars nor more than two hundred dollars.

SEC. 6. It shall be unlawful for any pharmacist, druggist, or apothecary to sell, barter, or give away any poisons without distinctly labelling the bottle, box, or package, in which it is contained with the name of the article, the word "poison" and a vignette representing a skull and cross-bones, and the name and place of business of the seller. The purchaser must be made aware of the poisonous nature of the article, and shall represent that it is to be used for a legitimate purpose. The seller shall also enter in a book kept for that purpose the date of sale, name of purchaser, name and quality

of the poison, and for what purpose it was purchased.

Sec. 7. The provision shall not apply to the dispensing of poisons in usual doses, nor to physicians' prescriptions.

Sec. 8. Any person or persons violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction shall be fined twenty-five dollars for each offence.

Sec. 9. All acts relating to the sale of poisons are hereby repealed.

Sec. 10. This act shall take effect and be in force from and after its passage.

Approved March 10th, 1882.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,608.—**Elixoid and Valoid** (Canada).

These are new terms, originated in England, to denote elixirs and fluid extracts. A *valoid* is a liquid or fluid extract, each pound of which represents one pound of the crude drugs. It would seem that the term *elixir* was thought to be misleading, or possibly productive of prejudice. At all events, technical language has been enriched by two new glossological abortions.

No. 1,609.—**Paper Bottles.**

We have had several inquiries relative to the possibility of obtaining paper bottles in this country, similar to those mentioned in European journals. We have just seen a statement in *The American Stationer* that Mr. L. H. Thomas, maker of ink, at 59 Michigan Avenue, Chicago, has commenced the manufacture of these bottles. They are about two-thirds as heavy as glass, and can hardly be broken by usual accidents.

No. 1,610.—**Black Coating for Nickel** (R. C.).

We are informed that this may be produced in the same manner as it is done on brass. Dissolve copper in nitric acid to saturation; immerse the articles in it, and then heat them moderately over a charcoal fire, turning them constantly. This must be repeated several times, until the tint is dark enough. Finally, the objects are polished with olive oil.

We have no experience with this ourselves and would suggest that you try the method on some inexpensive object, before risking some costly apparatus. We would also be thankful for information as to the success.

No. 1,611.—**White Paint for Metal** (C. S.).

We are asked to suggest a white paint or white cement, which will not soften in contact with diluted alcohol or turn dark when immersed in alcohol and exposed to sunlight.

This is a problem which is difficult of solution. All ordinary paints are more or less soluble in alcohol. We might venture to suggest that you try zinc white in a solution of india rubber in benzol.

No. 1,612.—**Cod-Liver Oil Emulsion** (Subscriber).

This correspondent says: "Please let me know through your paper a

good method for preparing an emulsion with cod-liver oil that will remain unchanged for a reasonable length of time. I have experimented with powdered acacia, alkalies, and pepsin, but without good permanent results."

We advise the writer of the above to try the formula outlined in an adjoining answer. If the emulsion is *well made*, it will keep for a long time, but it should not be exposed to the air, nor put into a warm place.

The old-fashioned acacia emulsion, if properly made, with correct proportions, and a little alcohol added, will likewise keep for a long time. Look back to page 64 of this volume (April No.); you will there find a very complete article on the making of emulsions.

No. 1,613.—**Alabaster Cement** (R. C.).

We would suggest that you try one of the following:

1. **Casein Cement.** To skim milk, from which all the fat or butter has been removed, add a little vinegar, remove the curd, and wash it with water until it no longer has an acid reaction. Then express the water as much as possible, and dissolve it to saturation in a cold concentrated solution of borax. This cement must be applied very thin, and the broken objects must be firmly kept together for several days, to allow the cement to set.

2. **Glue cement.** Soak 1 oz. of best white isinglass (or, for common purposes, glue) in cold water until it is soft. Then pour off and express the excess of water, and dissolve the isinglass in 4 oz. of strong acetic acid, with the aid of heat. Add 1 drachm of powdered boracic and 5 grains of benzoic acid. The bad odor which some kinds of gelatin or glue have, may be overcome by some flavoring agent.

3. Dissolve celluloid in ether until of syrupy consistence, and apply on the fractured edges. Keep the fragments quietly in contact, until the ether evaporates.

No. 1,614.—**Cleaning New Rubber Corks and Tubing** (M.).

New rubber corks and tubing are always coated with more or less sulphur, and perhaps also some of the "filling" that is often added to them (which is often powdered soap-stone). Mere washing in water will not remove this coating, especially from the inside of tubing. It is best gotten rid of by boiling the goods in a solution of 1 part of sulphide of sodium and 2 parts of caustic soda in 10 parts of water. The tubing should be lifted out of the liquid occasionally, and carefully re-immersed, so that new liquid will pass throughout its bore. After having been thoroughly boiled in this manner, the goods are carefully washed in water. If the tubing is previously treated with warm water and thoroughly kneaded or beaten, so as to loosen the coating adhering to the inside, the above-described cleaning-process will be much more thorough.

No. 1,615.—**Preventing Rubber-Tubing from Getting Brittle** (M.).

Commercial rubber-tubing of the present time is by no means what it used to be. The sharp competition between manufacturers, and the small profit alleged to be made by the latter, are undoubtedly the chief cause. There is so much foreign material ("filling") now mixed with the rubber, that it either loses a great deal of its elasticity or, even if it possesses the latter, loses it quite rapidly. Even the best rubber-tubing is apt to get hard or brittle by age. Much more so the cheap and poor tubing usually sold by dealers. The only way in which this hardening can be avoided is to keep all rubber-tubing under water. It should be carefully washed after being used, and then coiled in a tub or vessel of clean

water, which should not be allowed to become foul. This keeping under water will change the color of the tubing in the course of time, gray tubing becoming darker, and colored tubing generally paler. But the *quality* of the rubber will not deteriorate.

Some years ago, it was announced that a patent had been taken out on a process of preventing rubber-tubing from hardening and cracking (see *NEW REM.*, 1883, 25). The process consists in steeping the tubing in melted paraffin, and subsequently drying it in a room, at the temperature of about 100°. We have no experience with this, and while we believe that paraffin will have some effect in preserving the tubing, we cannot understand why it needs to be "dried" after being steeped in paraffin.

When the hardening has not proceeded very far, tubing and other soft rubber goods sometimes be rendered serviceable again by steeping them in a mixture of 1 part of water of ammonia and 2 parts of water.

One precaution should always be observed in the use of soft rubber goods of all kinds, and that is protection from oil or grease. Rubber which has become greasy loses its elasticity; becomes brittle very rapidly, and it is almost impossible to restore it to its former state of usefulness.

No. 1,616.—**Emulsion of Cod-Liver Oil** (Ch. and J., England).

The popular cod-liver oil emulsion which you inquire about in your letter is not made with milk, nor does it contain any so far as we know, but it is made with Irish moss. In *NEW REM.*, 1881, p. 194, we published a paper by Dr. A. B. Huested, of Albany, on emulsions, made by means of Irish moss, and for details of the process we must refer you to this. In a condensed form, the process is as follows:

Take of dry Irish moss 4 drachms (240 grains), wash it thoroughly in two or three portions of cold water, put into a suitable dish, and pour upon it 32 fl. oz. of water. Apply heat, gradually increasing until the boiling point is reached, continue till the moss is nearly all dissolved and the whole amount reduced to about one-half. While still hot, pour upon a funnel-shaped wet flannel filter, and allow the mucilage to drain off, not using pressure or stirring, as this would force through small particles of the moss, and make it cloudy and dirty. To the strained product, which will amount to about 13 fl. oz., add 3 fl. oz. of glycerin. A decoction of Irish moss of this strength will readily make an emulsion of cod-liver oil of 50 per cent, and even more. The glycerin assists in preventing the separation of the emulsion when salts are to be added.

In making the emulsion of cod-liver oil, Dr. Huested found it best (which we can confirm by our own experience) to make it in a bottle holding about one-half more than the quantity desired to be made. Supposing two pints are to be prepared. First introduce the mucilage—15 fl. oz.—then the oil in five or six portions, altogether 16 fl. oz., shaking thoroughly between the additions, and until the mixture is white and creamy, without the appearance of streaks when the mixture is thrown up against the inner surface of the bottle, and allowed to run down. The emulsion amounts now to 31 fl. oz., and it may either be completed by adding more of the mucilage, or syrup, or water until the 32 fl. oz. are obtained, or, if any flavoring substances or any salts are required to be added, they may be dissolved in just enough water to make up to bulk. It has been found by experience that the addition of about 15 grains of common salt and about 1 or 2 oz. of alcohol to the pint of emulsion makes it still more stable.

For practical information on emulsions, made by the standard method from oil, gum, and water, see the paper by Prof. J. Lewis Diehl, in *NEW REM.*, 1882, 138.

No. 1,617.—*Nerolin* (U. A.).

This is a new chemical, belonging to the same series to which artificial vanillin, cumarin, and the so-called heliotropin belong. Its exact chemical constitution has not yet been announced, so far as we know. It possesses a very strong odor so closely resembling that of orange flowers that it may be used in aqueous or alcoholic solution, as a substitute for oil of neroli, for making up the less expensive perfumes, and for scenting soaps. It is sold by Fritzsche Brothers, of 34 Barclay street, at \$3.00 per ounce. It appears in form of soft, unctuous crystalline scales, soluble in water and alcohol.

No. 1,618.—*Fluid Extract of Wild Cherry* (W. E. W.).

The official fluid extract of wild cherry will mix, clear, with syrup, provided it was itself free from sediment. Though probably the best and most perfect formula made public up to 1882, yet it has been found that the product made by it frequently deposits a precipitate. In 1883, Mr. Alonzo Robbins published a formula which is said to be free from this objection. It is as follows:

Moisten 100 parts (or 25 av. oz.) of wild cherry, in No. 40 powder, with 50 parts (12 fl. oz.) of water, and set aside for 24 hours. Then mix 20 parts (5 av. oz.) of sugar with the moist powder, pack in a percolator, add a mixture of 1 vol. of alcohol and 5 vol. of water, and let macerate for 48 hours. Then percolate, adding more of the same menstruum, until the wild cherry is exhausted. Reserve the first 80 parts (19½ fl. oz.) of the percolate, add to the remainder 10 parts (2½ av. oz.) of glycerin, and evaporate to a soft extract. Dissolve this in the reserved portion and add enough of the menstruum to make 100 parts (24 fl. oz.).

No. 1,619.—*Bronze Liquid or Liquid Bronze* (J. M. C.).

A bronze color may be produced on many metals by special processes, varying according to the nature of the metal and other circumstances. For instance, a copper medal may be bronzed, after being rendered chemically clean, by being immersed into a boiling solution made by boiling equal parts of verdigris and chloride of ammonium with some strong vinegar and a certain proportion of water. The coating produced on the copper is due to the formation of an oxide. Since the method of bronzing varies according to the metal, it will be impossible for us to give to our correspondent any other method but that in which bronze powder is mechanically applied. We do not advise the purchase of any liquid bronze, but recommend that the best commercial so-called gold bronze be procured. This should be mixed in a cup with some oil of turpentine and just enough boiled linseed oil to give it a little body, so that the bronze powder will not at once sink to the bottom. If applied by a brush, it will leave a shining metallic coat on drying. Any attempt to add varnish or similar substances will destroy all gloss in the dry coat.

If our correspondent's object is to put up a liquid bronze for the market, he may take enough hints from the above to accomplish his purpose. Most of the vehicles sold in fancy-goods stores for applying bronze, are composed largely of naphtha. If care is taken to keep this away from open flame, it will probably be the cheapest and best.

No. 1,620.—*Reaction for Arsenic* (Student).

The method of which you desire in-

formation is probably that recommended by O. Schlickum in the *Pharm. Zeit.* (1885, 465) for detecting arsenic in bismuth and antimony preparations, and in all other substances soluble in hydrochloric acid. It is as follows:

If a small crystal (about ½ to 1 grain) of sulphide of sodium is dropped into a test-tube containing a solution of 5 to 7 grains of stannous chloride in 45 to 60 grains of hydrochloric acid, both sulphurous acid and hydrosulphuric acid are generated, the latter in consequence of the reducing action of the stannous chloride upon the sulphurous acid. If upon the surface of this solution there be carefully poured some hydrochloric acid containing arsenic, a yellow ring of sulphide of arsenic will immediately be formed at the point of contact of the two liquids, even if there is only 1/1000 grain of arsenious acid present. This yellow ring gradually spreads upward. If as much as 1/100 grain of arsenious acid be present, the whole upper layer will assume a yellow color in a few minutes. If arsenic acid is present, the reaction takes place more slowly.

No. 1,621.—*Indelible Ink* (R. C.).

From among the many formulae recommended we select the following:

1. *Silver Ink.* Nitrate of silver 1 drachm, water 2 drachms, water of ammonia, sufficient to precipitate the oxide and to redissolve it again. Add a little carmine to make the writing or marks made with it visible.

2. *Aniline black.* Make two separate solutions; one containing 17 parts of chloride of copper, 21 parts of chlorate of sodium, and 11 parts of chloride of ammonium in 120 parts of water. The other consisting of 240 parts of hydrochlorate of aniline, 400 parts of water, and 120 parts of glycerin. For use, 1 volume of the first-mentioned solution is added to 4 volumes of the second. The writing is at first greenish, but finally becomes very black. If heat is applied, the black color appears more rapidly, but the fabric is apt to be injured by it.

3. *Indigo Ink.* Into a flask put 10 parts of very finely powdered indigo, 25 parts of pure sulphate of iron (ferrous), and 15 parts of dry caustic soda dissolved in 120 parts of distilled water. Close the flask immediately air-tight with a stopper. Shake it occasionally until the blue color has disappeared, then allow to settle. The supernatant liquid contains *indigo-white* in solution, which by exposure to air is changed to insoluble blue-indigo. Just before use, take 10 parts of the decanted liquid, mix it with 2 parts of mucilage, tint it with a little fuchsin or other aniline color (to make the writing visible) and write at once on the fabric. The blue color will come out under the influence of air and light.

No. 1,622.—*Shoe Polish* (G. F. H., Nashville, Tenn.).

"I have been for some time trying to get a practical working formula for liquid shoe dressing, and have tried every one published in the *AMERICAN DRUGGIST*. Last one in August number, page 157, consisting of glue, logwood, indigo, etc., which makes a very good polish, but spoils after keeping three or four weeks. I used Irish glue in one lot, and white in another, of the best procurable quality. Both lots seemed first to sour, and drop down a deposit seemingly of logwood. After the souring, it gelatinized, and became too offensive for use. Can you inform me what is the trouble? Or can you inform me what will keep the glue from spoiling that will not precipitate logwood or nigrosine? I have tried a great many formulas, and none prove or give satisfactory results. Any information will be highly appreciated."

The point which our correspondent wishes information on is one which can only be cleared up by experiment. It is very likely the most important feature of the whole formula, and no one is likely to expend upon it the time and money except he who wishes to put the formula to some practical use.

We regret to say that all that we can do is to make suggestions. In the first place, you ought to try—since you appear to have a good formula now—whether you could not prevent the mixture or the glue from souring and spoiling by the addition of some preservatives. Among these we would suggest, in the first place, naphthol (which you may obtain in any quantity and at low price from the Albany Aniline and Chemical Works), or carbolic acid. Perhaps salicylic acid might answer to some extent. Again, perhaps some advantage may be gained by using vinegar or diluted acetic acid of more than ordinary strength. Or the bichromate may be increased in quantity. By the way, a part of the glue can probably be replaced by glucose. If bisulphide of carbon did not usually have such a disagreeable odor, we would recommend this as the very best preservative. It is slightly soluble in water, and probably also in the mixture referred to. If more is to be added, it may be dissolved in *poly-solve* (*AM. DRUGG.*, 1884, 22) when it will mix with aqueous liquids.

Will the correspondent who sent us Query 1,588 in our October number have the kindness to communicate with Mr. O. T. Jester, No. 721 Green st., Philadelphia.

Care of Stove-pipes.

THE *Scientific American* offers some suggestions that may prove serviceable for those who are getting their stoves in order for the coming winter, and find their stove-pipes rusted and unsightly. Dip rusted pipe in one part of sulphuric acid and ten of water, and then into a bath of hot lime-water. Finally rub with dry saw-dust.

To give it a polish apply the following mixture:

Asphaltum 2 pounds.
Boiled Linseed Oil..... 1 pint.
Oil of Turpentine..... 2 quarts.

Melt the asphaltum in an iron pot, boil the linseed oil and add while hot. Stir well and remove from the fire. When partially cooled, add the turpentine. [This operation had best be undertaken out of doors where there is less risk of fire.]

The Mindererus Bottle,

if of flint glass, acquires a dimness for which there is no remedy, resulting from the action of the contents upon the lead silicate of the glass. Ammonium-acetate solution is one of the best solvents for "insoluble" lead salts; for which reason the new British Pharmacopœia directs that liquor ammonii acetatis should not be kept in flint-glass bottles.—*Chemist and Druggist*.

Chilblain Crayons.

Camphor..... 3 parts.
Iodine 6 "
Olive Oil..... 96 "
Paraffin..... 37 "
Alcohol..... q. s.

Dissolve the camphor in the oil, and the iodine in as small a quantity of alcohol as possible. Add the mixed liquids to the melted paraffin and pour the whole in suitable moulds. The pencil can be rendered hard or soft by the addition or diminution of olive oil.—*Journ. de Méd. de Paris*.

THE
American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 12. WHOLE No. 138

FRED'K A. CASTLE, M.D., - EDITOR
CHAS. RICE, PH.D., ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

DECEMBER, 1885.

SUBSCRIPTION PRICE per year, . . . \$1.50
SINGLE COPIES, 15

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

THE paper by Professor Oldberg on page 222, is unquestionably the most important contribution to the literature of the metric system that has appeared for a long time in this country. The facts referred to, the position held by the writer and his reputation as the most earnest advocate, heretofore, for the introduction of this system of weights and measures into practical pharmacy, cannot fail to put a stop, for some time at least, to any further increase in the employment of this system outside of laboratory work.

We venture to predict, also, that Prof. Oldberg makes so good an argument for the relative perfection of the system now generally in use in the United States, that no one will take the trouble to modify it even so slightly as he suggests, to make it conform in any way to metric standards. The general opinion will be that the varia-

tion would, for all general purposes, be so slight that it will be better to let well enough alone than to run the risk of confusion.

When this journal was changed from a quarterly to a monthly issue in January, 1876, we announced our intention to express quantities, as far as practicable, in the terms of the metric system, and we have since, on numerous occasions, published extended tables and comments which were calculated to aid the comparison of one system of measurement with the other. After ten years of hopeful effort toward the introduction of the metric system we fail to appreciate any decided increase of feeling in its favor among our readers, and it becomes a question of some importance whether, for most purposes, the end will justify the trouble, or, to use an old saying, "whether the game is worth the candle." Within the ten years past, "Metric Bureaus" have been established and gone out of existence. Societies have resolved to adopt the metric system and still continue to use the one left to us by our fathers; hundreds of papers and discussions have been published, and a few physicians have taken the trouble to learn the posology of their remedies so that they could use the metric system with some facility. Not one medical school in the country has taught the metric doses of medicine in a manner to render students as familiar with them as they are with the ones generally used; and on the other hand, the liability to mistakes resulting from the use of the system when the prescriber and dispenser were not equally familiar with the metric notation, has had several lamentable illustrations.

As an example of the practical working of many efforts to render the metric system popular among physicians, we will mention the experience of the largest County Medical Society in the United States. Largely through the influence of one of its members, a committee of three was appointed to report upon the subject, and in time the result of its labor appeared at length and in various forms. An investigation of the *personel* of the committee showed that its prime mover and chairman was not actively engaged in practice, and rarely had occasion to write a prescription. Another member, upon being questioned with regard to his own practice in using the system, said he did use it occasionally, but not often; and the third, while advocating its use by others, never used it himself.

We shall feel reasonably sure that the great majority of our readers will not be grieved if, in the future, we express quantities in grains, drachms, and ounces, and we shall not consider it desirable to devote much space to advocating the system proposed by Prof. Oldberg, until the sentiment in favor of a drachm of sixty-two grains, etc., has become pretty general.

THE communications published in this and preceding numbers relative to the military status of the Hospital

Stewards of the U. S. Army should convince our readers of the justness of the claims of this worthy and honorable branch of the pharmaceutical profession, and stimulate an united effort in their behalf. We are aware, from personal knowledge, of the laborious and responsible duties connected with this branch of the service, and believe that it is mainly owing to the difficulty of securing united action on the part of persons residing so far apart, that some increase of pay and rank has not already been secured for them.

THE Committee on Unofficial Formulas, appointed by the American Pharmaceutical Association, at its last meeting, desire the co-operation of all the pharmaceutical organizations in the United States and Canada. A circular has been prepared, explaining the nature of the proposed work, which will be forwarded on application addressed to the committee at the College of Pharmacy, 209 and 211 East Twenty-third street, New York.

Our readers who desire a scientific periodical devoted to topics outside the course of their regular business, are recommended to try *The Kansas City Review*, edited by Theo. S. Case, M.D., and Mr. Warren Watson, and published in Kansas City, Mo. This magazine has already entered upon its ninth volume, and is a thoroughly progressive and readable publication. We have had the pleasure of receiving it since its commencement and appreciate it highly.

It is stated by the daily papers that the anti-vaccination crank, who has stirred up most of the resistance to vaccination in Chicago and Montreal, on being arrested, was found to have been vaccinated three times, the last time within a few weeks.—*Boston Med. and Surg. Jour.*

AN exchange notes the result of an attempt on the part of the Pharmaceutical Council of Ireland to found a national college of pharmacy on the basis of a limited liability company. The response to an appeal addressed to all pharmaceutical chemists and apothecaries keeping open shop in Ireland was a definitely promised capital of £5!

Morphine Habit in France.—Quoting, in the *Union Pharmaceutique*, Mr. Madsen's assertion, made at the Brussels Congress, that the habit of morphia injection is seriously extending in Denmark, and that the alkaloid is imported by patients direct from Germany and England, M. Genevoix, Director of the Pharmacie Centrale, says the case is as bad or worse in France. Dealers in ladies' goods, having obtained admission into the saloons of the ladies to be tempted, offer them solutions of morphia as well as laces and muslins. The police are on the look-out for these vixens, and have already arrested a few. There is a touch of M. Zola in this narrative.—*Chemist and Druggist.*

BIBLIOGRAPHY.

GRUNDLAGEN DER PHARMAKOLOGIE. Einleitung in das Studium der Rohstoffe. Von F. A. FLÜCKIGER und A. TSCHIRSCH. 2. Aufl. 186 illust. 8vo. Berlin: Springer, 1885. 8 marks.

MANY of the readers of this paper will have had occasion to peruse or to profit by the first edition of this well-known work, by the pen of Prof. Flückiger alone. It contributed much toward awakening a wider interest in this subject, even outside of the country where it was issued, and we always regretted the circumstance that it was not translated into English, particularly as there is absolutely no work in the English language which covers the ground. The new edition, in which Prof. A. Tschirsch is associated with Prof. Flückiger, lies before us. It is an entirely new book, embodying every essential fact established by the investigations up to the present time regarding the morphology, and more particularly the anatomy of the cell, its contents and walls, and the various vegetable tissues and structures which are found in plants. At every step, special attention is bestowed upon the best methods of recognizing and diagnosing the various organs or structures under the microscope, though the authors have wisely omitted special chapters on the construction and use of this instrument, since numerous special works on the microscope are available. The number of illustrations has been correspondingly increased, and the numerous references to standard works or monographs enable the student to pursue his researches into more minute details. In the presentation of such subjects as chlorophyll, gum and mucilage, and others, in which there is still much speculation, a judicious selection has been made of the better established facts or views. We should have stated in the beginning, that the larger portion of this edition (morphology and anatomy) has been re-written by Prof. Tschirsch, who has also added 37 new illustrations. The first part, treating of the general principles and the methods of presenting the subject of pharmacognosy is by Prof. Flückiger. The peculiar nature of the subject treated, and the many modern technical expressions (some of them of quite recent date) which occur in it, make the task of translation rather difficult. It is to be hoped, however, that an English translation will soon be elaborated by a competent person.

A MANUAL OF WEIGHTS, MEASURES, AND SPECIFIC GRAVITY, including Principles of Metrology; the Weights and Measures now in use; Weight and Volume and their reciprocal Relations; Weighing and Measuring; Balances (Scales) and Weights; Measures of Capacity; Specific Weight and Specific Volume, and their Determination and Practical

Applications, with Rules and Tables, By OSCAR OLDBERG, Pharm.D., Professor of Pharmacy and Director of the Pharm. Lab. of the Chicago College of Pharm. Chicago, 1885 (Publ. by the Author), pp. vi, 248. 8vo.

THE title of this work gives a general idea of its contents, though, on examination, it will be found to contain much fuller information than might be expected from the title alone. In glancing over the preface, we are at once struck by the unexpected announcement that the author has abandoned his support of the metric system and his proposition to substitute an entirely new standard of weights and measures. [See his paper on this subject on page 222 of this number.]

Prof. Oldberg has evidently devoted much study to the subject of weights and measures, and it will interest every thoughtful reader to follow his plan and arguments for new systems, differing but little from those now in use, which would be perfectly com-

nology of Medicine and the Kindred Sciences, with their Signification, Etymology, and Pronunciation, with an Appendix, etc., etc. By JOSEPH THOMAS, M.D., LL.D., etc. On the basis of Thomas' Comprehensive Pronouncing Medical Dictionary. Philadelphia: J. B. Lippincott & Co. 1886, pp. 844, roy. 8vo.

ALTHOUGH in many respects a very good work of its kind, it is by no means complete, as its title would lead one to infer. Special prominence is given to pronunciation and derivation of words, and in these particulars it is especially valuable. The appendix contains much valuable matter relative to Latin terms, phrases, etc.; writing prescriptions, doses of medicines in common use, chemical symbols, orders and families of living mammalia, and weights and measures. The book is well adapted for the use of students.

FOURTH ANNUAL REPORT OF THE ILLINOIS BOARD OF PHARMACY, with Abstract of State Pharmacy Register. 1885, pp. 200, 8vo.

THIS contains, besides the official report, the published minutes of the Board, abstracts of the cases prosecuted by it, the State Pharmacy Law, and lists of the pharmacists registered throughout the State arranged according to location and alphabetically. Another valuable feature is the list of towns, with their respective populations. A summary gives 3,110 registered pharmacists, and 670 registered assistant pharmacists, of which 646 and 143 respectively are in Chicago. Only 87 out of 210 applicants for registration during the preceding year were successful.

A. R. Tatem & Co., Salem, Ohio, manufacturers of cut and gummed labels, and jobbers of pill and powder boxes, have favored us with a copy of their elaborate catalogue of labels, pre-

scription blanks, etc., which evince good taste and extensive facilities for doing this class of printing.

THE PHYSICIAN'S POCKET DAY-BOOK. Designed by C. HENRI LEONARD. M.A., M.D., etc.

THIS book is 3½x7½ inches in size; will serve for 25 or 50 families weekly for 13 months, and is provided with blanks for recording 94 obstetrical cases and cash accounts. It is provided with a pocket and flap; is bound in red leather, and is a very ingenious and serviceable pocket memorandum.

Biedermann, Dr. Rud. Chemiker-Kalender, 1886. 2 parts. 3m.

Neubauer & Vogel. Anleitung zur qualitativen und quantitativen Analyse des Harns. 8te Aufl. 8vo. Wiesbaden.

Schröder, G. v. & Schröder, J. v. Wandtafeln f. d. Unterricht in d. allgemeinen Chemie und chemischen Technologie. Fol. (In numbers, each with 3 plates.) Per plate, 2 m.



NOT AN ENTHUSIAST.

FAITH DOCTOR: Now, my dear sir, just tell me how you feel.
IMPATIENT PATIENT, who has stared the Doctor in the eye steadily for hours, in a vain endeavor to forget his pain: I feel like a d—d fool; what's the bill?—Life.

mensurate with the metric system. It is very doubtful, however, whether the time is ripe for introducing another system, no matter how good it may be.

The book covers the ground so well and thoroughly that we need not extend our remarks, but would recommend its careful perusal and study by every pharmacist and student of pharmacy. The following corrections are to be noted:

P. 10, in heading of table, read grammes for grains. P. 61, line 2, read liter for meter; p. 161, the figures of lines 7 to 10 from below should all be moved up one line).

THE PHYSICIAN'S VISITING LIST (Lindsay & Blakiston's) for 1886. Philadelphia. P. Blakiston, Son & Co. THE thirty-fifth yearly edition of this necessary pocket account-book is at hand, and contains, as usual, much practical information, in addition to the record blanks.

A COMPLETE PRONOUNCING MEDICAL DICTIONARY; Embracing the Termi-

INDEX.

- A**bsorption apparatus, Habermann's,* 48
 Acetone from wood distillation, 14
 Acid, anisic, 94, 148
 arsenious, compounds of arsenic acid with, 147
 arsenic, compounds of arsenious acid with, 147
 boric, 104
 boric, harmful in food, 77
 boric, as a food preservative, 3
 boric, risk from strong solution of, 57
 benzoic, pill of, 100
 carbolic and chloral hydrate, soluble mixture of, 183
 carbolic, fracture of bottles containing, 98
 carbolic, glycerite of, in ear-ache, 132
 carbolic, in creasote, 75, 138
 carbolic, reddened, 56
 carbolic, removal of color from, 77
 carbolic, risk from strong solution of, 57
 carbolic, solubility in liquid paraffin and benzin, 113
 carbonic, Baur's apparatus for estimating,* 9
 carbonic, test for nitrates, 207
 cathartic, 95
 citric, test for, 145
 ergotinic, 25
 formic, as a preservative of honey, 16
 glacial acetic, as a solvent of albuminoids, 97
 hydriodic, syrup of, in rheumatism, 226
 hydrocyanic in fermenting linseed, 216
 hydrofluoric, Hempel's apparatus for making,* 185
 hydrosulphuric, free from arsenic, 110
 nitric and ferrous sulphate, reaction between, 58
 nitric, precautions in keeping, 136
 nitrous, reagent for, 112
 nitrous, test for, 113
 osmic, in peripheral neuralgias, 166
 oxalic, behavior of quinine in presence cinchonidine towards, 134
 oxalic, volatility of, 217
 Acid, phosphoric, determination of, 74
 phosphoric in urine from diseased persons, 114
 protecting metallic vessels from, 98
 salicylic, as preservative of alkaloids in solution, 198
 salicylic, failure of antiseptic action in contact with wood, 97
 salicylic, improved process for making, 44
 salicylic, risk from strong solution of, 57
 sphacelinic, 26
 sulphuric, s. g. of, 213
 sulphuric, in vinegar, 137
 sulphuric, mercury in, 112
 sulphuric, percentage strengths of, 213
 sulphuric, s. g. of pure, 16
 sulphuric, uses of, 229
 sulphurous and its salts, titration of, 36
 sulphurous, solution, 178
 sulphurous, strength of aqueous, 37
 tannic, iodized as a reagent, 89
 tartaric, Italian duties on exported argols, 213
 Acids, mineral, solid form of, 49
 Aconitine, different modes of preparing, 108
 Agaricine in excessive perspiration, 212
 Ague remedy, Hallberg's, 37
 "Albadermine," 171
 Albumen, sublimated, 207
 Albuminated sublimate dressings, 6
 Albumin, new reaction with, 216
 Albuminoids from peptones, separating, 78
 Alcohol, ethylic, separation of methylic alcohol in presence of, 114
 methyl, 14
 methylic, separation of, 114
 removal of vegetable coloring matter from, 139
 sale of, 59
 wood, separation from ethylic alcohol, 178
 Algin, 59, 226
 Alkalies, new indicator for, 152
 Alkaloidal solutions, deposits in, 137
 Alkaloids, extraction of, 78
 in solution, preservation by salicylic acid, 198
 Alkaloids, oleate of, 25
 synthesis of, 71
 Allyl acetate, 14
 Aloes, distinction of, 75
 powdering, 224
 Alum, glycerite, 117
 Aluminium, manufacture of, 53
 oleate, 24
 permanganate as a disinfectant, 183
 Alum, iron, 80
 solidified glycerite, 178
 Alveloz, 56 (see Aveloz)
 Ambergris, use in perfumes, 179
 Amelliky, 254
 Ammonia, action on solutions of potassium salts, 172
 on metals, action of, 179
 Ammonium hydrate, 16
 Amyl nitrite, impurity of commercial, 204
 Amyris linaloe, 157
 Anæsthetics, relative safety of, 216
 Anagyrine, 160
 Aniline color in urine, test for, 36
 Anthracene from water-gas tar, 96
 Antimony, commercial black sulphide, 128
 separation of arsenic from, 13
 Antiseptics, color reactions of, 34
 Antipyrin, 14, 37, 210
 adulteration and price, 68
 and spirits of nitrous ether, incompatible, 226
 as an antipyretic, 162
 crystallized, 213
 dermatic effects of, 6
 increased demand for, 212
 Antipyretics, color reactions of, 34
 Antiseptic dressings, 6
 Apomorphine in asthma, 56
 muriate, test for, 204
 Apothecaries in the Army and Navy, 60 (see Hospital stewards)
 Apricot syrup, 99
 Aquaria, artificial sea-water for, 23
 Aquilaria agallocha, 157
 Architecture and decoration of drug stores,* 1, 21, 105, 121, 131 (see Decoration)
 Aromatic ammoniacal tincture, 116
 Arsenic, Clemens' solution of bromide, 99
 from zinc, removal of, 74
 hydrosulphuric acid free from, 110
 Arsenic in sodium sulphate, 180
 oleate, 24
 Schlickum's reaction, 234
 separation from antimony and tin, 13
 test for, 153
 ASSOCIATION—
 American Pharm. Assoc. and its work, 150
 Am. Pharm. Assoc. proceedings, 199
 Basis of membership in State Associations, 150
 Massachusetts Board of Pharmacy, 191
 National Retail Druggists' Association, 150
 National Wholesale Drug Assoc., 211
 Worcester, Mass., Pharm. Assoc., 110
 (See also advertising pages)
 Atropine, color test for, 37
 increased price, 212
 Aveloz, milk of, 108 (see Alveloz)
 Azolitmin, 108
 Bacteria, discoverer of, 137
 Baking powders, commercial, 128
 powders, various, 38
 Balsam Peru, small supply, 212
 Balsams, detection of turpentine in, 205
 Bandolin, Chinese, 97
 Bareel's Indian liniment, 115
 Baumé's hydrometer, new standard, 57
 Bay rum, 35, 119
 Beef, analysis of Liebig's extract, 148
 peptone, 19
 wine, and iron, 59
 Beet-juice, removing potash from, 78
 Belgian pharmacopœia, 137, 159
 Belladonna, alkaloidal strength of leaves, 217
 extract, assay of, 230
 leaves, comparative quality of, 126
 suppository, Barnouveau's, 218
 Benzin, aqueous solution, 98
 gelatinized, 35, 204
 solubility of carbolic acid in, 113
 solutions, filtering, 147
 BIBLIOGRAPHY, 19, 40, 60, 120, 140, 160, 200, 219, 236
 Bilineurine, 48
 Bismuth, atomic weight of, 49
 commerce in, 108

- Bismuth hair dye, 58
new sources of, 212
ointment for freckles, 172
oleate, 24
phosphate, 224
subnitrate, manufacture of, 114
- Bisulphites on chlorates, action of, 113
- Blackberry leaves as a substitute for tea, 36
- Blackening brass work, 71
- "Black-heads," 77
- Blacking for leather, glossy, 219
- Blaud's pills, 35
- Boilers, tinning, 156
- Bois de citron du Mexique, 187
de rose femelle, 157
- Boldine, 97
- Borax and glycerin, reactions of, 197
in alkalimetry, 94
- Botany, application of photography to, * 101, 141
- Bottles, cleansing essential oil, 119
fracture of carbolic acid, 98
paper, 119, 233
- Bottling machines, 179
- Bougies, gelatin, 158
- Brahmo Yan, 179
- Bretonneau's pill, 80
- Bricks in a wall, to determine, 71
- British pharmacopœia, 134, 170
- Bromide of arsenic, Clemens' solution, 99
- Bromine and bromides, commerce in, 108
Hart's apparatus for testing, * 27
precautions in keeping, 136
quantitative estimation, * 187
solidified, 212
test for iodine in presence of, 59
- Bromochloralum, 158
- Bromoform, new mode of preparing, 57
- Bromo-strychnine, physiological action of, 113
- Bronze liquid, 234
- Bronzing, 139
- Brucine, assay of, 230
physiological action of, 113
- Burette for alkalimetry, * 147
Greiner's, * 49
holder, Huguershoff's, * 205
holder, Rice's rotary, * 107
- Butter analysis, 17, 218
distinction from artificial, 96
examination of, 55
testing, 9
- C**adaver poisons, 171
Caffeine, commercial salts of, 106
sodio-benzoate of, 195
- Calabash tree, use of the fruit, 160
- Calcium hydrosulphide, pure 51
tartrate, valuation of, 49
- Calendar of meetings of medical societies, 100
- Camphor as a preservative of sugar in solution, 133
commerce in, 108
elder-flower water for diluting spirit of, 27
ice, 35
oils, natural, 175
solubility increased by myrrh, 82
- Cannabine tannate, 14
- Cannabinon, 117
- Cannabis indica as a local anæsthetic, 4
indica, copper in extract of, 3
- Canudo amargoso, 158
- Cantharidin in preparation of cantharidal collodion, 117
- Capsicum, commercial, 128
- Capsule holder, rotary, * 72
machine, Strickler's, * 6
- Caramel, detection of, 75
- Carbon disulphide as an antiseptic, 15
disulphide, aqueous solution, 98
disulphide, Ckiani's burner for, * 68
disulphide, decomposition and detection of, 55
disulphide, deodorizing, 56
disulphide, solubility in water, 96
- Carmine, preparation of, 94
- Cascara amarga, use of, 108
cordial, 78
- Casein mucilage, 135
- Casks, enamelling, 99
- Cassia, damage to crop, 212
- Cat's-eye, 98
- Celluloid, coloring, 139
- Cement, diamond, 39
for alabaster, 33
for porcelain, 157, 180
stopper, 31
- Cements which resist heat and acids, 36
- Cerium salts, diminished demand for, 212
- Chartreuse, 35
- Chinoline, 116
- Chemical equations, construction of, 151, 186
- Chemicals, officinal, solubility of, 194
- Chloral as antidote to strychnine, 217
hydrate, action of metals on, 96
hydrate and carbolic acid, soluble mixture of, 183
hydrate, incompatibility of, 162
hydrate, test of, 95
improvement in preparation of, 44
- Chlorates, action of bisulphates on, 113
- Chloride of lime in gonorrhœa, 70
of lime, test of, 218
- Chlorine, Hart's apparatus for testing, * 27
quantitative estimation, * 187
- Chloroform as a hastener of precipitates, 49
new mode of preparing, 57
new source of, 215
solubility in water, 96
water, 69
- Chlorodyne, 178
- Cholera drops, Thielman's, 35
- Choline, 48
- Chrysarobin, mode of using, 4
- Churchill's hypophosphites, 78
- Cinchoceratin, 135
- Cinchol, 135
- Cinchona alkaloids in Madras, manufacture of, 173
alkaloids, quantitative determination of, 134
barks, value of, 157
commerce in, 108
commercial prospects, 152
in Ceylon, 15
in India, 15
the so-called fat in, 135
- Cinchonamine as a reagent, 108
- Cinchonamine sulphate, 94
- Cinchonidine in sulphate of quinine, 215
pills, excipient for, 198
testing commercial quinine for, 153
- Cisterns, water-tight, 118
- Cleaning petroleum vessels, 37
- Clemens' solution of bromide of arsenic, 99
- Cocaine, 212
chemical constitution of, 132
factory in Lima, 195
fungus, 64
hydrochlorate, 14
in acute coryza, 95
in sea-sickness, 215
note on manufacture of, 23
possible sources of, 109
strong solution, 56
terminology of, 116
quality of commercial, 197
- Coca, commerce in, 109
in the United States, cultivation of, 15
leaves, supply in Europe, 212
wine of, 178
- Cochlospermum tinctorium, 154
- Cockroaches, exterminating, 227
- Codeine, high cost of, 212
- Cola-nut as substitute for guarana, 109 (see Kolanut)
- Colchicin, 162
- Cold as a remedy in sciatica, 144
- Colds, "overcoat," 226
- Collodion, cantharidal, 117
cantharidal, test for, 111
- Cologne, 38, 136
Hoyt's German, 198, 218
- Color, black, for fats, 37
for show bottle, 39, 111, 199
- Colored fire, formulas for, 215
- Coloring matter from alcohol, removing, 139
matter, vegetable, removing, 119
- COMBS, C. E., on the assay of commercial pepsins, 103
- Comedones, treatment of, 77
- Concentrating dilute solutions, Landolt's apparatus, for, * 89
- Condurango, commerce in, 109
- Copaiba and magnesia, pills of, 197
balsam, 108
emulsion, 216
on urine, influence of, 31
- Copper and zinc-ammonium compounds, 55
from extracts, removal of, 4
in extracts of Cannabis indica, 3
oleate, 24
oxide, test for, 111
solution, alkaline, as a test for glucose, 113
sulphate in struma, 97
sulphate, sediment in solution of, 219
- Cork bricks, 36
effects of essential oils on, 198
impermeable, 3
- Cornutine, 25, 26
effects of and cost of, 109
oxytocic effect of, 97
- Corrosive sublimate with serum and albumen, compound of, 207
- Cosmetics, 171
formulas for, 214
- Cover for evaporating dishes, Meyer's, * 31
- Crayons, chilblain, 234
- Cream of Roses, 139
- Creasote, carbolic acid in, 75
detection of phenol in, 138
- Crucible tongs, Muencke's, * 92
- Cubebs, adulterated, 109
spurious, 207
test for purity, 212
- Cupreol, 135
- Curarine, possible source of, 188
- CUTTING, J. C., on syrup of the phosphates of iron, quinine, and strychnine, 107
- Cyanogen, test for, 35
- Cypripedium, examination of, 129
- D**aphnidium cubeba, as adulterant of cubeba, 212
- Daturine identical with atropine, 109
- Deaths from nostrums, 64
- Decoction apparatus, makers of, 78
- Decoration of drug-stores, * 21, 41, 61, 81
(see Architecture)
- Dentifrice, 99
alkaline, 188
- Didymium, decomposition of, 176
- Disinfectants disinfected, 15
value of various, 68
- Disinfection by sulphur, 116
- Dispora caucasica, Kern., 109
- Dobell's solution, 58
- Dorg, 154
- Dover's solution, 135
powder, assay of, 39
powder, syrup, 117
- Doundake barks, 154
- Doundakine, 154
- Dropping flask, Pool's, * 133
- Drugs, vegetable, best mode of preserving, 217
- Drying-oven, Rohrbeck's, * 176
- Dyes for domestic use, 119
- Dyspepsia, remedy for, 216
- E**ar-ache, remedy for, 132
- Eau de Bayaderes, 58
de Cologne, 58
- EBERLE, H. T., on salicylate of iron, 221
- EDITORIALS—
American Pharm. Association, meeting, 170
Pharm. Association, work for the, 170
- Artistic decoration of stores, 10
- Campion plan, 50
- Change in price of subscription, 191
- Chemical equations, construction, 151
- Decoration of drug-stores, 70
- Druggists as photographers, 150
as photographic supply dealers, 110
- Forgery of examination papers, 50
- Hours of work for drug-clerks, 130
- Index catalogue of the Surgeon General's office, 21
of scientific periodicals, 211
- International Pharmaceutical Congress, 50, 189
Pharmacopœia, 209
- Japanese use of Roman type, 261
- Kelley & Durkee's store, 90
- Library of the Surgeon General's office, 50

EDITORIALS—

Licenses to sell liquor and their influence in retail pharmacy,* 50
 Medicines in physicians' offices, 211
 Mistakes in dispensing, 90, 191
 Morphine salts, mode of preparing to avoid mistakes, 191
 Parsons, H. B., 170
 Pharmaceutical legislation in Massachusetts, 130
 legislation in Michigan, 70
 Poroused plasters, 10
 Price of quinine, 10
 Prize-men in the N. Y. Col. of Pharmacy, 70
 Propriety of using patented drugs, 189
 Report of Massachusetts Analyst of drugs, 30
 Right to use the name of another establishment, 211
 The fire-department and license to sell combustibles, 30
 The trade in New York, 10
 Trade, influence of jobbing-houses in the retail, 50
 Window decoration, 110
 Egg-albumen, preparing pure, 35
 Eggs, to preserve, 198
 Elaphrium aloëxylon, 157
 Elixir of calisaya and strychnine, ferro-phosphated, 116
 of long life, 179
 of phosphates, 132
 taraxacum, comp., 78
 Elixirs, making, 79
 "Elixoid," 233
 Emulsion-mixer,* 224
 Enamel for casks, 99
 Ergot, active principle of, 97
 distinction of young from old, 180
 proximate principles in, 25
 Essences, artificial, 80
 Ether, hypochlorous, effect of light on, 213
 influence of light on, 136
 spirit of nitrous, deterioration of, 216
 Ethyl nitrite in spirit of nitrous ether, etc., 137, 155
 Euonymin, a new glucoside, 109
 Euphorbia pilulifera in asthma, 64
 Evaporating in a hot vacuum, apparatus for, 194
 Explosive compound, 97
 Extraction apparatus, Johnson's,* 187
 Extract, pine-needle, 219
 Extracts, triple, 139
 precipitates in fluid, 184

Fat extraction apparatus,* 172
 (so-called) in cinchona, 135

Fats, black color for, 37
 bleaching, 18
 melting points, 80
 method for examining, 37

Fehling's solution, improved, 229

Fermentation in the mouth, prevention, 148

Ferment, new alcoholic, 36

Filter for mercury, Pfaunder's,* 133
 for syrups, 25
 hot, Landolt's,* 89
 paper, Kreussler's apparatus for washing,* 89
 press, Hempel's,* 131

Filter pumps,* 214
 Filters, Casamajor's,* 173
 Florida water, 18, 38
 Fly-paper, 215
 Fly-plates, 137
 Food-adulteration in New York, 69
 Forest wool, 8
 Formularies for druggists, 117
 Freckles, ointment for, 204,
 removal of, 170
 Frey, J., death of, 20
 Frost-bite, treatment of, 56
 Fresenius' laboratory, 82
 Fruit, preserving, 118
 Fume flue, Hempel's,* 183
 Funnels, air-tight,* 27
 strainer, Butterfield's,* 204
 Furfuraldehyde, 14

Gas-burner, Halberman's,* 75; Muencke's improved,* 223

Gas-generator, Tissandier's,* 137

Wollny's,* 171

Gas-regulator, Baumhauer's,* 171

Gauze, antiseptic, 27, 70, 177

Heidenreich's iodoform, 70

iodoform, 27

Geissospermine, 158

Geissospermum læve, 158

Gelatin, beef, water, and peptone, 82

bougies, 158

for bacteria culture, 92

Gentian, alkaline mixture, 179

Gibier's pills, 56

Gilding, 139

Ginger ale, 174

commerce in, 59

pop, 208

soluble essence of (so-called), 117, 216

Glabrina, 17

Glass beakers, experience with, 176

mercurial coating of, 35

solubility of, 15

Glonoine, discovery of therapeutic use of, 161

Glycerin and its uses, 93

capsules, 173

commercial, 188

honey, 39

of commerce, 181

relation of $\frac{1}{2}$ of water to s. g., 44

solidified, 78

Glycerinum nitricum, 109

Glycyrrhizin, sources of, 114

Glucose, alkaline copper solution test for, 113

as a pill-excipient, 153, 180

Gnats, preventing annoyance by, 177

Gold and potassium, cyanide of, 150

Golden hair dye, 118

Gold-paint, 119, 139

Graphite for sand-bath, 100

Grindelia in asthma cigarettes, 76

Guachamacá, 188

Guachamacine, 188

Guaiacum, deposit in tincture, 174

Gum Arabic, commerce in, 136

Arabic, mesquite gum as substitute for, 224

Arabic, to decolorize, 77

Gutta-percha as a vehicle for chrysarobin, 4

literature of, 177

Hager's dyspepsia pills, 80

Hair-dye, bismuth, 58

Hair-oil, walnut, 174

Hair, superfluous, removal of, 227

Hair-wash, 56

Wilson's, 224

Hamlin's wizard-oil, 115

Hand-grenade fire extinguishers, 98

Heat-regulator, Fock's,* 135

"Hegar's fluid," 224

Helianthin, 94

as an indicator, 129

Helinin as an antiseptic, 212

Heliotrope perfume, artificial, 37

Holloway's pills, 35

Homo-quinine, conversion into quinine, 34

source of, 34

Honey, formic acid as a preservative, 16

purity of, 44

Hood, non-conducting, Le-corme's,* 7

Hop-bitters, 57

Hopea splendida, fatty matter from, as a basis for ointments, etc., 160

Horsford's baking powder, 38

Hospital stewards, status of, 115, 159, 195, 231

Hoyt's German cologne, 198, 218

Hydrastis, estimation of hydrastin in, 84

Hydrastin in hydrastis, 84

Hydrogen dioxide, nascent, as a bleach, 54, 118

Hydroquinone wash for the skin, 171

Hyoscine, hydrobromate of, 27

hydriodate of, 156

Hyoscyamus, deposits in tincture, 174

extract, assay of, 230

Hypophosphites, Churchill's, 78

compound syrup of, 179

compound solution of, 179

Ichthyol, 212

manufacture of, 226

Idunium, 4

Illicium parviflorum, source of, 177

Impermeable Russian plaster, 176

Index Medicus, the, 120

Ink, aniline marking, 70

indelible, 234

indigo, 234

ribbon, 77

silver, 234

Insect powder, new crop of, 212

powder, toxic effect of, 132

Insurance on drug stores, 161

Iodine, a new test for, 74

decolorized solution, 223

examination of commercial, 144

extraction, 55

Hart's apparatus for testing,* 27

in Peru, production of, 150

in presence of bromine, test for, 59

in urine after external use of iodoform, 112

oily tincture, 169

quantitative estimation,* 187

solution, Magendie's, 39

solution, volumetric, 74

vapor, ethereal, 39

Iodoform and bicarbonate of sodium, 95

eruption, 56

external use as source of iodine in urine, 112

gauze, 27, 177

Iodoform gauze, Heidenreich's, 70

cleaning mortars from, 113

compound powder, 174

new mode of preparing, 57, 98

preparations, effect of light on, 135

volatility of, 206

Iodol, 224

Ipomea sinuata, 51

Iridium, 25

Iron, action on chloral hydrate, 96

alum, 80

and potassium tartrate, 18

and quinine, wine of, 59

hypophosphite, solubility of, 119

iodide, concentrated solution, 92

iodide, permanent solution of, 208

mixture "Ward's" (sic), 198

official scaled salts of, 18

oleate, 24

ore, analysis of, 156

powdered, test for, 111

saccharated oxide, 69

salicylate, 221

subsulphate in diarrhoea, 67

sulphate and nitric acid, reaction between, 58

Jaborandi alkaloids, 226

Jaboridine, 226

Jacaranda lancifolia in venereal disease, 97

Jadali, 154

Jalap, compound tincture, 140

resin, test of, 111

Jambolanum seeds in diabetes, 111

Jeannel's multiple antidote, 156

Jequirity, demand for, 109

seeds, powdering, 137

JOHNSON, PROF. L., on Photography as applied to the study of botany,* 101, 141

Kamala, 57

Kaphyr, Kefir, Kefyr, Kephir, 212

Keratin coating for pills, 44, 173, 212

Kerosene lamps, care of, 82

Kieselguhr and its use in transporting acids, 49

KILMER, F. B., on window decoration, 82

Kola nut,* 5

nut, notes on, 133, 158 (see Cola-nut)

Koussou, scarcity of, 109

Label-point, 9

Label-writing, 92

Labels for stock-bottles, 100

Lacmoid a substitute for lithium, 68

price of, 109

Lactopeptin solution, 197

Lactophosphates, chemistry of, 38

Lafayette mixture, 117

"Lait Virginal," 224

Lamp, alcohol, Reinhardt's,* 145

Lamps, kerosene, care of, 82

Lead in aerated water, estimation of, 33

ointment, 197

oleate, 24

Leather belting, repairing, 98

- Leather, whitening, 139
 Lemonade, salicylic, 218
 Liebig's extract of beef, analysis, 148
 Lime, milk of, density and strength, 149
 on quinine, action of, 183
 solubility of, 14
 syrup of chlorhydrophosphate, 18
 testing chloride of, 218
 Linseed, hydrocyanic acid in fermenting, 216
 "Listerin," 56
 Lithium carbonate, solubility, 186
 carbonate, tests of, 111
 Liquid gauge for tubes, Martin's, * 173
 Liquors, sale by pharmacists, 117
 LLOYD, H., on officinal process for assaying opium, 231
 Lutkins, J. T., death of, 20
 Lycopodium, accident with, 95
- M**ACLAGAN, H., note on cocaine, 23
 H., on copper in extract of cannabis indica, 3
 Magendie's iodine solution, 39
 Magnesium hydrosulphide, 53
 Malaria, altitudes least liable to, 217
 Malonetia nitida, 188
 Malonetine, 188
 Manganese ore, 98
 Manna mixture, 218
 Masks, impermeable, * 73
 Mathematical chemistry, 79, 119
 Materia medica collection, * 211
 McCall Anderson's dusting powder, 56
 Meat extracts, analysis of, 154
 powdered, 103
 Mendola's reagent for nitrous acid, 112
 Menthol, anaesthesia by, 174
 and its uses, 75
 as substitute for cocaine, 212
 Coffin & Wood Chemical Co.'s, 211
 commerce in, 211
 cones, 38
 plaster, 180
 quantity of imported, 196
 source of Todd's, 115
 testing, 36
 Mercurial ointment with poisoning, prevention of, 178
 preparations, manufacture of, * 42
 soap, 180
 Mercuric chloride, volatility of, 123
 iodide, solubility, 97, 227
 Mercury and morphine, oleate, 24
 and urea, bichloide, 219
 and urea, bichloride, in syphilis, 131
 coating glass with, 35
 filter, Pfaunder's, * 133
 in sulphuric acid, 112
 ointment of nitrate, 127
 oleate, 24, 184
 Westen's apparatus for pouring, * 183
 Mesquite gum as a substitute for gum Arabic, 224
 Metals, action of ammonia on, 179
 on chloral hydrate, action of, 96
 Methyl acetate, 14
- Methyl chloride, French mode of transporting, 109
 chloride in neuralgia, 67
 ethyl ketone, 14
 formate, 14
 Metric system and apothecaries' weights and measures, 222
 terms, abbreviations of, 115
 Microbotany, works on, 158, 177
 Microchemistry, 158
 Micro-organisms, removal from water, 169
 Milk analysis, Adams' method, 136
 of lime, density and strength of, 149
 of roses, 139
 pancreatized, 139
 Milk-sugar, Swiss manufacture of, 109
 Mindererus bottle, the, 234
 Mineral water bottles, pressure in, 77
 waters, extemporaneous, 99
 Mirin-shu, 77
 Mistakes in dispensing, 138, 180
 Mixing machine, 38
 Moles, to remove, 224
 MORGAN, F. H., on boric acid, 104
 Morinda, species of, as source of Doundake barks, 154
 Morphine habit in France, 236
 in opium, determination of, 16
 in opium, estimating, 73
 in urine, detection of, 114
 reactions, 31
 sulphate, alleged conversion into apomorphine, 204
 Mortars, cleansing, 113
 mending, 19, 35
 Mosquito bites, remedies for, 177
 oil, 204
 Mouth wash, antiseptic, 77
 wash, Vigier's, 35
 Munra, 156
 Murdock's liquid food, 79
 Musk-rat musk, 109
 Mustard, failure of California crop, 212
 paper, 5
 Myniak tangawank, 160
- Naphthylamine test for nitrous acid, 113
 Naphthalin as a surgical dressing, 17
 formula for, 100
 gauze, 177
 masking the odor of, 17
 purification of, 109, 212
 Naphthol as an antiseptic, 144
 demand for, 109
 Nerolin, 234
 Nickel, black coating for, 233
 removal of tarnish from, 35
 varnish for, 179
 vessels, 57
 Nitrates, carbonic acid test for, 207
 Nitrogen in organic substances, estimation of, * 208
 method of estimating, 54
 Nitroglycerin, 37
 in commerce, 109
- NOTES ON PRACTICAL PHARMACY:**
 Emulsions, 64, 86
 Gelatins or jellies, 46
 Infusions and decoctions, 45
- NOTES ON PRACTICAL PHARMACY:**
 Mixtures, 11, 27
 Pills, 191, 225
 Powder mixtures, 87, 124
 Saturations, 47
 Noyau, 51
- Oil,** bergamot, effect on corks, 198
 cassia, deficient crop of, 212
 castor, aromatic, 59
 cod-liver, artificial, 31
 cod-liver, emulsion, 233
 cod-liver, external use of, 129
 cod-liver, ferrated, 187
 cod-liver, purity of, 37
 cod-liver, testing, 72
 Deelina, 155
 fusel, products of, during acetification, 149
 Haarlein, 219
 in cattle cake, estimation of, 132
 juniper, failure of crop, 109
 lemon, turpentine in, 131
 linaloe, source of, 157
 linseed, to bleach, 185
 lobelia, 177
 mosquito, 204
 of man, 228
 olive, restoring rancid, 80
 olive, testing, * 31
 pennyroyal, source of, 179
 peppermint, testing, 19
 rose, 107
 shark-liver, 114
 (sic) stillingia, 177
 turpentine in oil of lemon, 131
- Oils,** bleaching, 18
 essential, detection of turpentine in, 205
 essential, exports from Ceylon, 9
 essential, in pills, 172
 essential, prices of, 109
 essential, resinified, 48
 estimation of essential, 97
 ethereal, restoration of old, 97
 method for examining, 32
 natural camphor, 175, 207
 purification of, 136
 Ointment for freckles, 204
 lead, 197
 of nitrate of mercury, 127
 new basis for, 160
 soap as basis for mercurial, 180
 sulphur, 216
 Oleate, mercury, 184
 Oleates, percentages of metal in, 25
 preparation of various, 24
 Oleoze, 70
 Opionin, 180
 Opium assay, Flückiger's method, 149
 culture in Persia, 168
 determination of morphine in, 16
 estimation of morphine in, 73
 extract, assay of, 230
 in the Mexican pharmacopoeia, 18
 in tobacco, detection of, 139
 on U. S. assay process, 221
 short crop of, 212
 trade with China, British, 148
 Ortega, 51
 Osgood's cholagogue, 178
 Ox-gall as a remedy in migraine, 176
- Oxygen apparatus, Hempel's, * 185
 generator, Muencke's, * 207
 in leuchæmia, 216
 manufacture of, 36
 Tacke's apparatus for preparing large quantities, * 31
- P**acking for drainage-tubes, 38, 39
 Paint, gilt, 119
 white, for metal, 233
 white label, 9
 Pancreatin, inutility of, 212
 Pao pareiro, 158
 Paper filtering, toughened, 108
 manifold, 78
 tough filtering, 97
 Para-amido-benzol-azodimethyl-aniline as a reagent for nitrous acid, 112
 Parabuxusidine, 56
 Paraffin, absorption by the skin, 148
 liquid, solubility of carbolic acid in, 113
 sealing bottles with, 208
 Paraldehyde, 14
 as antidote to strychnine, 187
 mixture, 99
 suppositories, 221
 use of, 160
 Parchment for dialyzers, 57
 Parthenia in fevers, 224
 Parthenine in neuralgia, 147
 Paste, label, 57
 Pastry, vaselin in, 135
 Peach syrup, 99
 Pelletierine, 95
 Peppermint, alcoholate, 188
 plants, source of supply, 38
 T. CHRISTY, on the source of Japanese, 77
 Pepsin, mode of administering, 150
 pure, 148
 preparation, assay of, 84
 assay of commercial, 103
 waste of, 124
 Peptone, beef, 19
 dry, 111
 soup, 186
 Peptones, separating albuminoids from, 78
 Percolator, Thresh's, * 9
 Pereirine, 158
 Perfumery, formulas for, 58, 167, 214
 works on, 140
- PERSONALS:**
 Canning, H., 40
 Doremus, R. O., 40
 Ebert, A. E., 40
 Fehling, Prof. H. von, 180
 Foussangrives, 40
 Gellatly, W. A., 60
 Graham, Dr. C. C., 60
 Henninger, A., 40
 Kolbe, Dr. H., 40
 Landerer, Prof. X., 180
 Matthews, Geo., 60
 Parsons, H. B., 150, 170
 Redwood, Prof., 180
 Sillmann, B., 40
 Stowett, Louisa R., 40
 Trommsdorff, Dr. H., 120
 Waller, Dr. E., 40
 Warburg, Dr., 180
 Peru balsam, benzin test for, 58
 balsam, commerce in, 108
 Pestles, mending, 35
 Petrolatum ointment and lard, absorption by the skin, 148
 Petroleum vessels, cleaning, 37
 Pharmaceutical legislation in Michigan, 115

- Pharmacy, French police regulations respecting, 218
law of Wyoming, 232
practical treatises on, 119
- Phenol-camphor, 69
- Phosphates, syrup of the, 107
- Photographic dry-plates, 77
films, experiments with, 16
- Photography, as applied to botany,* 101, 141
- Physostigmine, demand for, 111
- Picramnine, source of, 108
- Pignaciba, 158
- Pill excipient, 153
199
machines, rotary, 179,
- Pills, compressed, 197
containing essential oils, 172
Joseph Ince on the manufacture of, 163
keratin coating for, 44
Roup, 224
- Pilocarpidine, 226
- Pilocarpine hydrochlorate, degree of acidity allowable, 111
in pneumonia, 96
reaction of, 212
use as a hair-restorer, 111
- Pinch-cock, Elges',* 133
Klobukow's,* 224
- Pineapple syrup, 99
- Pine-needle extract, 219
odor essence, 140
wool, 8
- Piper crassipes as adulterant of cubebs, 212
- Pipes, brierwood, 216
- Pipmenthol, source of Todd's, 159
- Plants, effect of gas on, 215
influence of growing, 215
preservation of, 180
preservation of juicy, 146
- Plaster, impermeable, 176
menthol, 180
- Platinum vessels, repairing, 134
- Podophyllin, tinctures of, 39
- Poisoning by mercury, prevention, 178
in England and Wales, 172
- Polypodium vulgare as a source of glycyrrhizin, 114
- Polyporus senex as a styp-tic, 155
- Pomegranate root bark, active principle of, 95
- Poppy in Persia, 168
- Potash, caustic, of commerce, 186
from beet-juice, removing, 78
- Potassa, liquor, as a remedy for corns, 229
- Potassio-ammonic oxalate as a substitute for tartar emetic in the arts, 136
- Potassium bromide, arsenite of, 176
chlorate in urine, determination of, 181
chlorate, new process, 107
chlorate, poisonous effects, 37
chlorate, reaction of fused, 97
iodide, arsenite of, 176
iodohydrargyrate, 80
oleate, 24
permanganate baths, 172
permanganate, sensitiveness to light, 75
salts, action of ammonia upon solutions of, 171
- Potatoes, influence of cooking upon, 181
- Practical pharmacy, notes on, 11, 27, 45, 64, 86, 124, 191, 225
- Precipitates, hastening, 49
in fluid extracts, 184
- Prescription query, 198, 199
- Proprietary medicines, should their formulas be made public? 123
- Ptomaines, 171
- Punicine, 95
- Putz-pomade, 4
- Pyridine in asthma, 212, 228
- Pyroxanthine, 14
- Quebeck Board of Pharmacy, 58
- Quebrachol, 135
- Quillaia bark as an expectorant, 229
- Quinine, action of lime on, 183
alkaloids, reputed source of, 128
assay, 17
behavior towards oxalic acid in presence of cinchonidine, 134
borate, 56
commerce in, 152, 212
description of, 146
detection of cinchonidine in, 215
hydrofluorate in malarial disease, 143
hydrochlorate, tests of, 111
in Grecian commerce, 103
Kerner's test, 193
lactate, 80
lactate, hypodermic use of, 179
mixture, an agreeable, 37
mixtures, avoidance of bitter taste, 177
occurrence in other barks than cinchona, 34
pills, 124
pills, tartaric acid in, 180
reactions, 31
tannate, 149
testing for cinchonidine, 153
- Quinoline in diphtheria, 77
- "Rackarock," 194
- "Red-drops," 135
- Reference books, 98
- Remijia pedunculata, 34
- Resinous substances, solution of, 57
- Resorcin in diarrhoea, 56
in gonorrhoea, 229
in laryngitis, 56
local use of, 175
- Rhamnus catharticus, medicinal properties of, 184
- Purshiana, medicinal properties of, 186
- Purshiana, demand for, 213
- Rhubarb, commerce in, 111
- Rice-wine, 77
- RIGNEY, W. J., on naphthol as an antiseptic, 144
- Rubber tubing, cleansing and preserving, 233
- Rust, from iron articles, to remove, 35
to prevent, 224
- Saffranine, 79
- Saffron, advanced price, 213
- Salicylic lemonade, 218
- Salt in ornamentation,* 205
several uses for, 130
- Salts, alkaline, iodized tannic acid as a reagent, 89
- Sand-bath, Rüdorff's,* 205
- Sanford's catarrh cure, 178
- Santonin, manufacture in Turkestan, 111
solution, 199
- Saponulates, 166
- Sarcocephalus esculentus, 154
- Sarsaparilla, compound fluid extract of, 199
- Sassafras, constituents of, 38
- School of pharmacy in Dublin, 100
- Scudamore's inhalation, 58
- "Sea foam," 140, 180, 218
- Senna, increase in price and source of, 111
leaves, active principle of, 95
- Serum, sublimated, 207
- Shampoo, 99
- Shellac varnish, filtering, 219
- Shoe dressing, liquid, 157
polish, 234
polish, liquid, 79
- Show bottle, red color for, 199
(see Color)
- Sienna, new discovered deposit of, 218
- Silicates, best fusing agent for, 51
- Silk, antiseptic, 96
culture, 98
- Silver oleate, 24
permeability by oxygen, 55
- SIMONSON, W., on estimation of hydrastine in commercial powdered hydrastis, 84
- Sinkaline, 48
- Siphon, Bode & Wimpf's,* 207
Pingy Moré's,* 72
- Sizygium jambolanum seeds in diabetes, 111
- Skin, care of, 111
- Soap as a basis for mercurial ointment, 180
pads, 100
sulphur, 49
- Soaps, toilet and medicated, 157
- Sodio-benzoate of caffeine, 195
- Sodium bicarbonate and iodoform, 95
bicarbonate, tests of, 111
borobenzoate, 5
nitrate as a remedy in heart disease, 36
nitrite, in gouty epilepsy, 230
nitrite, therapeutic action of, 230
oleate, 24
salicylate and lemon juice in malarial fevers, 36
salicylate, rare accidental effects of, 57
silicate solution, 228
sulphate, arsenic in, 180
sulphate, preparation of, 112
sulpho-ichthyolate, 212
- Soldering mixture, harmless, 96, 103
- SOMMER, A., on the manufacture of mercurial preparations on a large scale,* 42
- Smelling salts, 197
- Specific gravity apparatus, Schumann's,* 112
gravity balances,* 227
- Spirit of nitrous ether, ethyl nitrite in, 137, 155
- Splint, Levi's metallic,* 92
- Sponges, bleaching, 139
- Stains, oil, removal of, 9
- Stamps for patent medicines in Great Britain, 172
- Steam kettle, Mueller's,* 49
oven and still, Atkinson's, 6
- Stills, pharmaceutical, 118
- Stop cocks, lubricant for glass, 97
- Stove-pipes, care of, 234
- Straw, bleaching, 116
- Strings, how to break,* 23
- Strophanthin, 216
- Strychnine, assay of, 230
chloral an antidote, 217
paraldehyde as antidote, 187
- Strychnos Nux-vomica of Ceylon, chemistry and botany of, 145
- Styrone as a disinfectant, 76
- Sublimate gauze, 6
- Sugar, cane, detection in milk sugar, 188
diabetic, test for, 217
in urine, test for, 156
milk, detection of cane sugar in, 188
solutions, preserving, 132
- Sulphur as a disinfectant, 116
ointment, 216
Pasteur's apparatus for burning,* 69
precipitated, commercial, 128
solution, 178
- Sulphuretted hydrogen apparatus,* 230
hydrogen apparatus, Hager's,* 42
- Sun-burn, removal of, 171
- Suppositories, Barnouvrin's, 218
hollow gelatin, 48
new base for, 160
- Syrup of chlorhydrophosphate of lime, 18
of Dover's powder, 117
of hypophosphites comp., 179
of the phosphates, etc., 107
of violets, 77
simple, occasional offensive odor, 162
of Tolu, 179
- Syrups, filtering, 103
- Tamarind pastilles, 215
- Taraxacum, compound elixir of, 78
- Tartar emetic, potassio-ammonic oxalate as a substitute for, in the arts, 136
- Teilman's cholera drops, 35
- Temperature, lowest known, 221
- Terpene, formula for, 204
- Thalline, 14, 146
manufacture of, 178
- Thermometers, adjustable, 175
- Thermo-regulators,* 229
- "Thumps" in horses, 77
- Thymol, risk from too strong solution of, 57
- "Tinctura amara," 78
- Tincture, bitter, 77
deposits, 174
- Tin deposits in Australia, 194
separation of arsenic from, 13
- Tobacco, detection of opium in, 139
- TODD, A. M., on the source of pipmenthol, 159
- Tolu, soluble, 199
syrup, 26, 35, 179
- Toothache-cure, 64, 112, 204, 215
- Townsend's pills, 38
- Trade mark, a proposed, 138
- Tragacanth, glycerite, 116
- "Traumaticine," 162
- Triethylamine, 207
- Tropeolin, 94
- Trypsin as solvent for diphtheritic membrane, 69
- Tulipine, sialagogue action of, 218
- Turpentine emulsion, 38
in essential oils, detection of, 205
- University of Tokio, 138
- Urea and mercury, bi-chloride, 219

- Urea, estimation by titration, 54
 Urethan, a new narcotic, 204
 Urine, detection of morphine in, 114
 iodine in, 112
 phosphoric acid in cases of insanity and epilepsy, 114
- V**acuum regulator,* 228
 Valerian, decoction of, 68
 "Valoid," 233
 Varnish, black, 35
 bleaching, 18
 for nickel, 179
 shellac, filtering, 219
 shellac, to clear, 57
 absorption by the skin, 148
 Vaseline, impermeability of skin to, 100
 in pastry, 135
 melting-point, 132
- Vapors, noxious, removal of,* 33
 Vienna Stomach Bitters, 37
 Vigier's mouth-wash, 35
 Vinegar, estimation of free sulphuric acid in, 146
 toilet, 58
 Violets, syrup, 77
- W**afer capsule apparatus, Torta's,* 213; Vomacka's,* 221
 Wafers, makers of, 178
 Walnut hair-oil, 174
 Warburg's tincture, 17, 178
 WARDER, Prof. R. B., on the glycerin of commerce, 181
 Warts, remedy for, 35
 Warren's styptic, 38
 Wash-bottle, Habermann's,* 48
 Water, aerated, estimation of lead in, 33
 Water bath, Landoldt's,* 89
 bath, Reinhardt's,* 145
- Water bath, regulator for,* 191
 bath, determination of organic matter in, 136
 for aquaria, artificial sea, 23
 heater, rapid,* 67
 removal of micro-organisms, 169
 zinc in drinking, 52
 Weighing balance, Wittkowsky's,* 147
 WHITE, D. S., on filtering syrups, 103
 Whooping-cough, mixture for, 204
 Wild cherry, ferrated wine, 118
 cherry, fluid extract, 234
 Willesdon fabrics, 55
 Window decoration, 82
 Wine, test for aniline color in, 36
 Wines, detection of coal-tar colors in, 92
 Wire utensils,* 91
- Wizard oil, 140
 Wooden vessels correcting unpleasant taste from, 77
 Wood, dry distillation of, 228
 products of dry distillation of, 14
 Wound-dressing, 67
- Y**east, method of examining, 115
- Z**inc, action on chloral hydrate, 96
 ammonium and copper compounds, 55
 in drinking-water, 52
 oleate, 24
 phosphide, use in pill-form, 77
 process for separating, 137
 removal of arsenic from, 74

2 gal
256 +

